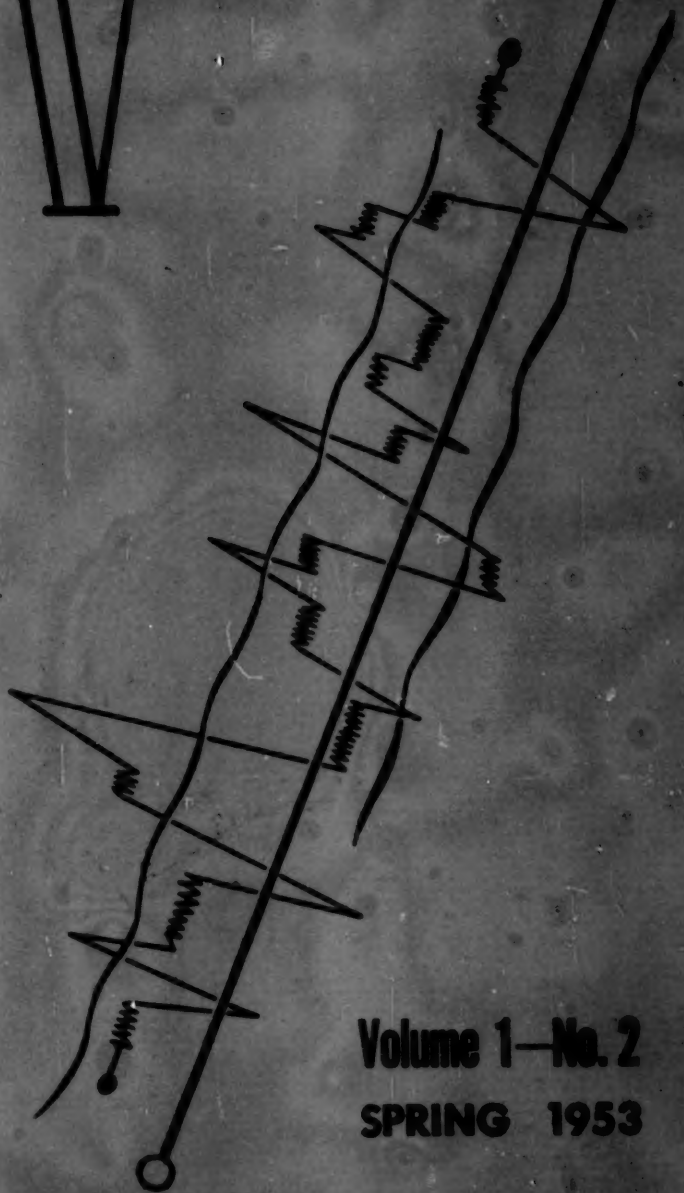
AUDIO VISUAL COMMUNICATION REVIEW



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AUDIO VISUAL
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EDITORIAL POLICY AND CHARTER AUDIO-VISUAL COMMUNICATION REVIEW

This statement of policy and charter was adopted by the Executive Committee of the DAVI, meeting in St. Louis, Missouri, February 28, 1953. It was submitted by the Committee on Professional Education thru the Editor, Editorial Board, and Editorial Consultants of the first Audio-Visual Communication Review.

The editorial policy governing the publication of the *Audio-Visual Communication Review*, a quarterly journal published by the Department of Audio-Visual Instruction of the National Education Association of the of the United States, is as follows:

1. *Purpose.*

Audio-Visual Communication Review is the professional journal of the audio-visual field. As such, its major purposes are to:

a. Bring to all persons interested in any aspect of human communication, particularly those areas of the communication process in which audio-visual methods and materials play a significant part, professional information and thinking at the highest possible levels.

b. Provide a means thru which specialists in communication may publish the results of research studies, theoretical constructions and critical analyses of the problems of the field.

c. Bring to bear, thru publication of pertinent materials, the broad thinking of such associated disciplines as sociology, social psychology and social anthropology on the problems of communication in modern society.

2. *Content.*

In order to achieve these purposes, the *Audio-Visual Communication Review* will include, together with other professional content, reports of original research, general theoretical articles, philosophical discussion of professional problems, research summaries and abstracts, reports of developmental programs of national and international significance, translations of pertinent articles from foreign literature, and critical reviews

of important literature and productions in the various audio-visual communication media.

3. *Organization and Administration.*

The editorial management of the *Audio-Visual Communication Review* is vested as follows:

a. In the Editor, who, under the policy outlined above and any further policy established by the Editorial Board, will edit the entire publication, determine the content of specific issues, solicit and select manuscripts, develop the continuing departments, appoint and terminate the services of departmental writers, determine the format and changes therein within limitations of facilities and budget, and carry on general activities associated with the editing of such a publication.

b. In the Editorial Board whose function it is to select the Editor, determine broad editorial policy, transmit same to the Editor, and to evaluate the effectiveness of the *Audio-Visual Communication Review.*

c. In the Editorial Consultants whose function it is to advise the Editor and the Editorial Board on matters of editorial concern and to review articles in their respective fields of specialization upon request.

After the original appointment by the Executive Committee of the DAVI, the method of selection and terms of service for the personnel described above is as follows:

a. *The Editor.* The Editor shall be selected by the unanimous vote of the Editorial Board, acting under a published statement of criteria. He shall serve an indefinite term at the will of the Editorial Board.

b. *The Editorial Board.* The Editorial Board shall consist of the current president of the DAVI, the Executive Secretary of the DAVI, both acting *ex-officio* but with the power to vote, and five members, two of whom shall be appointed for the first time for terms of two years and three of whom shall be appointed for the first time for terms of four years. The Editorial Board will determine which members shall have which terms. Thereafter, the terms of membership will be for four years. When a vacancy occurs, the Editorial Board shall submit recommendations of at least two names for each vacancy to the Executive Committee of the DAVI. The Executive Committee, acting under its constitutional powers, and taking into consideration but not bound by the recommendations, shall fill the vacancies by appointment.

c. The Editorial Consultants shall be appointed by the Executive Committee of the DAVI. For the first appointments, one-third shall be appointed for one year, one-third for two years, and one-third for three years. Thereafter the terms shall be for three years.

In the case of a disagreement on editorial policy arising between the Editor and the Editorial Board, the decision of the Editorial Board shall be final. In the case of a disagreement between the Editorial Board and the Executive Committee, DAVI, the decision of the Executive Committee shall be final.

All business matters pertaining to the *Audio-Visual Communication Review* shall be the responsibility of the Executive Secretary, DAVI.

The *Audio-Visual Communication Review* will carry no advertising or lineage for which industry has to pay.

MATURATION OF THE SOCIAL SCIENCES

• ROSS L. MOONEY

Stressing the significance of the trend toward interdisciplinary research, Dr. Ross L. Mooney points out the importance of the maturation of the social sciences to communication workers.

The author is Professor of Education in the Bureau of Educational Research, Ohio State University.

Terms such as "communication," "perception," "creation," and "valuation" are coming into prominence in social science research. They signify a stage in the development of the social sciences which is worth explicit recognition.

This development appears to be following a pattern which one would expect from his general knowledge of how intellectual maturation progresses in the life pattern of individuals when conditions are favorable to such maturation. Four general stages can be noted in the full maturation process as it extends from childhood to old age.

1. In children, the tendency is to take each experience in its turn for what it seems to be at the time—each arithmetic problem as it is given, each song as it is sung, each thought as it occurs. Tho generalizing is necessarily under way, the emphasis, in contrast to later stages of maturation, is upon the specific experience, taken within its immediate limits.

2. With progression thru adolescence and into young adulthood, specific experiences come to be increasingly seen as classifiable into more general types of experiencing. The individual problem in arithmetic comes to be seen as a sample of mathematical problem-solving, the individual song comes to be seen as a sample of singing, the individual thought as a sample of thinking. With the coming of adulthood, such differentiation into types of experiencing is accompanied by identification of the individual with certain particular lines of experiencing thru which he makes his living, establishes a home, and assumes responsible roles in the community. The emphasis is upon differentiation and selective identification.

3. As security is established in particular lines of experience and as the years move along, the samples increase in many facets of living, and perception widens to note an increasing range of lines of experience. If conditions are favorable, this is accompanied by a dawning sensitivity to a harmony among many different modes of experiencing such that they come to be seen as samples of something still more basic. Problem-solving, singing, thinking, etc. become sensed as harmonized somewhere in a deeper theme. A searching takes place among the hitherto differentiated classifications for an underlying universality of behavior that can tie life together in its manifold aspects and reveal deeper realizations of living. The theme now is "realizing living" thru recognizing the form and expression of man's being and becoming in many modes of his behavior. The emphasis is upon achieving an inclusive commonality.

4. In the closing years of life, insight into commonality accumulates until all of humanity and the whole universe is seen as united by a still more central process. As death approaches, there is a readiness to regard one's own life as being but an example of all life in the universe and to become prepared to join the major classification.

In the full life scale, maturation thus progresses from (a) immediately experienced specific occasions, to (b) differentiated lines of experiencing, to (c) common realizations within many modes of experiencing, to (d) universality. Each stage is a development out of the preceding stages as "figure emerging out of ground." Tho the individual case at specific times may show aspects of various levels, the general direction is from specific instances toward universality.

In relation to this scale, we can make note of the fact that a science is not possible at stage one. By definition, a science exists only at a level where classifications of specific instances have been agreed upon and where attention turns to the drawing of generalizations from those instances. The earliest stage for science is stage two.

The social sciences began at this level. They were given the broad field of man's behavior as their domain. Within this broad field, separations into specific social sciences were made on the basis of the "kinds of settings" in which man's behavior was to be observed. The settings taken for psychology were those of "man within himself"; the settings for sociology were taken as those of "man among men in groups"; those of economics were taken to be "man in his environment as he seeks to secure his physical needs"; etc. Within each science, the task was taken to be that of providing generalizations to cover the behavior observed in the settings thus classified. As is characteristic of stage two, generally, the main emphasis was upon the differentiation of each science from the others and upon the identification of individual scientists with chosen

fields while they gave themselves to the intellectual "mastery" of specific instances falling within their chosen fields.

It has been during this formative stage two that the social sciences have become woven into the fabric of our culture. It is at this level that universities, being within a period of rapid expansion, have set up their curricula and established their training for professional service and research. Under the influence of a strong emphasis on "differentiation and identification," specific vocabularies have been developed, books have been written, particular research methods have been evolved, professional organizations have been created, occupational roles have been established, etc., to root deeply social science at stage two into our intellectual and social structure.

However, in recent years, there have been signs that the social sciences are working their way into stage three. External and internal forces are urging growth in this direction.

Externally there are pressures both from society in the large and from universities in particular. From society in the large comes the requirement that social scientists take responsibility in helping men to meet their most critical problems. The physical sciences have produced a power over physical phenomena which has outrun society's capacity to keep the consequences under the control of constructive social aims. As a result, the central concern now becomes clearly focused in the problem of how man is to deal with man. Social scientists, identified as being men who give their professional attention to this problem, are now called upon to do for social control and betterment what the physical scientists have been doing for physical developments.

This means pressure to show to society what social science functionally means. This requires that that which was initially differentiated from the total field of man's behavior for selected concentration in the founding of the separate sciences now be put back into the main stream in such a way that it joins all the rest of the field to make sense out of the whole. When the job is that of fitting a particular into a field of many more particulars, the emphasis turns on commonality and synthesis at a deeper level of realization.

From universities, in which the bulk of the social scientists are located, there comes a parallel pressure for reformulation toward a commonality which has genuine power in the life of the undergraduate. The undergraduate colleges, looking at the range of the social sciences, with their apparent capacity to proliferate without end, their specialized languages, their growing bulk of materials, etc., cry out to know how all this can be brought together to make sense to the neophyte. The fear is expressed that colleges are losing disciplined control of their teaching and students are losing their grip on education. Old notions of curricula are

called into question and new foundations are sought in the theme of "general education." Pressure is put on the social scientists to find a way of cutting deeper across their fields to provide a structured "essence" which includes the core of all the social sciences and a view of each of the major social sciences in terms of its relevance to that core.

External pressures for deeper and more vital formulations are matched by less spectacular but equally potent pressures for growth coming from within the ranks of social science. What had been initially taken as suitable ground for differentiation among the social sciences is coming to be seen as unsuitable. The original classifications has been based upon differences in the settings in which behavior was to be observed and analyzed. Now that scientists in each of the major separate fields have had a number of years in which to analyze behavior in the particular settings assigned to them, it turns out that the key to understanding comes, not from the characteristics of the setting, but from the organization of behavior of "the whole man" as he confronts the particular setting. Thus it turns out that the psychologist is now trying to structure his conception of the organization of the-whole-man-in-his-environment, while the sociologist, the economist, etc., are attempting the very same construction. Efforts to create "the psychological man," "the sociological man," "the economic man," are now being modulated toward the creation of "the-man-in-his-environment."

This means that social scientists are increasingly coming into position where they find it extremely valuable to listen to one another across the boundaries of their fields. The growth of interdisciplinary research projects, interdisciplinary conferences, interdisciplinary seminars, etc., is currently quite rapid. As each man listens from the heart of his own field, he hears in the expressions of others from other fields a haunting and structurally familiar theme that is somehow also coming increasingly to consume the center of his own attention. Evidence of the same trend of internal necessity in the various social sciences is exhibited, as well, in the current interest which is shown in theory building, model construction, the logic of inquiry, and in the management of team research. All this is evidence of internal maturation to stage three, with external pressures to support the internal development.

It is onto this stage that the terms "communication," "perception," "creation," "valuation," and other terms like them are coming to play an important part. These terms are signs for functionally important dimensions of inquiry in each of the social sciences, regardless of the particular settings in which observations of behavior might be made. They are evidences of an emerging commonality of thought forms. They put us in better position to "realize life" in its many modes of expression, as befits an increasing maturity. They help to restructure social science from

the level of a "science of situations" to a "science of experience" with living man in the midst of whatever situations he meets.

This means we are moving, however slowly, from a level of "knowledge" toward a level of "wisdom." Progress may well be slow because social science has been structured into our culture at stage two and reformulation of that structure is required as a concomitant of the reformulation of thought. Work on a problem like "communication," as readers of this magazine have doubtless had cause to observe, involves fresh structuring of departmental and administrative relations within universities, if the people who are interested in and necessary to the work are to be brought together in effective fashion.

To offset this impediment to progress, however, there is a vitalizing stimulation which comes from the cross fertilization of strains which have heretofore been separate in the different disciplinary traditions. As the participants listen to one another talk, and hear, down underneath someplace, a familiar and significant theme emerging, no matter who talks or from what background, there comes a release of energy which seems universally to occur whenever an individual senses that his life is more universal than he had previously known or dared to hope.

Workers in the field of communication may have observed this constructive release of their energy as well as the before-mentioned deenergizing effect which comes from attempts to restructure departmental and administrative relations. Indeed the publication of a magazine of this kind indicates that the margin in the struggle lies on the side of the constructive release. The attempt to effect fresh social structurings for research in this area is worth the battle because of the values received from the fresh orientation and the deepened personal and professional insights which are gained.

Whatever the particular balance of power between progress and the social status quo in particular campus situations, the general case is clear. Maturity is required of the social sciences in order that internal necessities be fulfilled and in order that external needs of the universities and mankind be served. Stage three is needed in the world generally.

The 'problem of communication" has come into prominence, in this context of general social need, because man has to establish a commonality among men, and, for that to occur, fulsome communication is requisite. The "problem of perception" has come into prominence because man, in the midst of the complexities that surround him, has to establish clearly the position whence he is to organize his world. For this organization, an understanding of the process of perception and the central position of the perceiver is requisite. The "problem of creation" has come into prominence because man has to become clear as to his powers to make the world what he needs it to become. For this task, a full realization of

man as a universally creative being is requisite. The "problem of valuation" has come into prominence because man has to find a place in the making of his world for what he holds dear to his living. For this goal, an understanding of how values operate thruout all the activities of his life is requisite.

And thus these and other new "dimensions" for research in the social sciences come to have meaning in the broad social context for the maturation of society. Each of these "dimensions" is dependent upon the others and all are requisite for each other in the same sense that, in geographical space, the directions of north, south, east, and west are all mutually interdependent. In such a context, it becomes nonsense to assume that when one is taking the direction of east, he is doing so apart from his positioning with respect to north, south, and west. One who is working on the problem of communication is simultaneously involved in perception, creation, valuation, etc. The central theme in all is the realization of the forming-flowing of experience.

I wish I knew what a full set of these interdependent dimensions for the study of human behavior would be. For my present level of realization, the terms used above are reasonably satisfactory and there are still others which I might be able to add. However, the "cold mathematics" of this dimensional field have not yet come clear. Others are concerned with the same problem.

Without doubt, those who work on research in communications have the same problem before them and may well provide some major cues to the basic synthesis of inquiry for which many are searching.

AUDIO-VISUAL RESEARCH IN THE U. S. AIR FORCE

• A. A. LUMSDAINE

This paper is based on an edited transcript of an extemporaneous talk presented by Dr. Arthur A. Lumsdaine at the February 1952, meeting of the Research Section of the DAVI in Boston.

Dr. Lumsdaine heads the Audio-Visual Laboratory of the U. S. Air Force's Human Factors Operations Research Laboratories (formerly the Human Resources Research Laboratories), Air Research and Development Command. The opinions given by the author are his own and are not to be construed as necessarily representing official policy of the Air Force.

I have been asked to tell you something of the program of audio-visual research in the Air Force, which is being conducted by the Audio-Visual Research Laboratory, currently located in Washington, D. C. In describing this program, which was initiated by the Air Force in the latter part of 1949, I should like to do two things: first, to describe briefly the organization and its research facilities; and second, to characterize some major areas of research and development activity with which we are concerned.

Research Facilities

The Air Force program, unlike many research organizations, is set up as a continuing institution. One of the things that we have been doing over the two years of the organization's existence is to build up a laboratory with facilities for conducting experimental research on films. This has required considerable time, but appears well justified as a long-term research investment. The laboratory now includes a small, compact motion picture studio with all necessary equipment and services for constructing experimental film materials. I should mention here that we are not authorized to produce films for general distribution as Air Force training films; our film materials are for use only as experimental research tools. However, in order to accomplish the research it is necessary to be able to create experimental motion picture sequences

of all kinds.[1] To do this we have a small sound stage, an animation stand, a well equipped editing room, and facilities for studio and location synch-sound recording. In addition, we enjoy the advantage that we are part of a laboratory with considerably broader scope; consesequently, under the same roof, we have available excellent IBM and other statistical facilities, shop facilities, and graphic arts services. The location of the laboratory as part of a larger research installation also gives us access to many other technical and research facilities. Thus, as an "inservice" government research organization, we are able to utilize much of the same kind of interdepartmental assistance that one might enjoy in a major university.

The audio-visual research organization includes a staff of some eight psychologists and a group of motion picture technicians. In addition, as a very important supplement to the research activity of the in-service group, we support and monitor research done by contracts with several universities. At the present time we have six of these contracts: with Boston University, the University of Southern California, Yale, Cornell, Queens College, and New York University.

Another important research facility is a permanent installation at Sampson Air Force Base, one of the large Air Force basic training centers. Here we have a field staff that is in a position to carry out experiments for which the procedures and materials are designed in the Washington laboratory. This arrangement has the advantage of affording a continuing field operation, rather than requiring the inconvenience of making individual arrangements for each field study that is done. It also has another advantage. I don't want to stress the importance of "applied" at the expense of "basic" research; both are essential. However, perhaps there is sometimes a possibility of getting a little bit too far away from real training or teaching situations and confining experimentation too much to a sort of artificial vacuum. Even when one works in a real educational or training situation, he may, for purposes of an experiment, have to come in and give a film showing that is not in context with the regular curriculum. This can play hob with the operation of certain variables that influence the effectiveness of films, particularly motivational variables.

At Sampson Air Force Base we have, accordingly, two different kinds of experimental situations. The first situation is used when the nature of the experiment or the film is such that it can't be integrated directly with the training program. For this kind of work we have access to subjects with whom we can conduct experiments using any convenient film topic, regardless of whether it is part of the regular training curricu-

[1]This requirement for effective research on factors in film design has been previously discussed in more detail by the author (10).

lum. Under these circumstances we can work either in classrooms or in a more rigidly controlled situation such as that provided by a small mobile theater which seats an audience of about 18 people. This mobile theater, which we built in a large trailer, is equipped with various kinds of response-recording devices, including the kind which audience members can use to indicate answer choices to questions posed by a film. The trailer has an air conditioning and heating system to control the temperature and illumination as desired.

FIGURE 1. A class of basic trainees answering test papers after receiving experimental film instruction in regular classroom at an Air Force indoctrination training center.

In addition to these controlled situations, we have also developed experimental film materials which present subject-matter content that is an integral part of the regular training program, so that the film fits right in as part of a particular training curriculum. In the basic mathematics course, for example, we have been using experimental films on the reading of the vernier scale and micrometer, which are taught as an application of decimal fractions. Similarly, we have designed experimental films on the nomenclature of the carbine for experimentation in the premarksmanship training in that weapon. Thus a considerable share of our research data have been obtained right in the situation to which they will apply, rather than solely from tests conducted in more artificial, "guinea pig" situations with the hope that they *may* then apply to

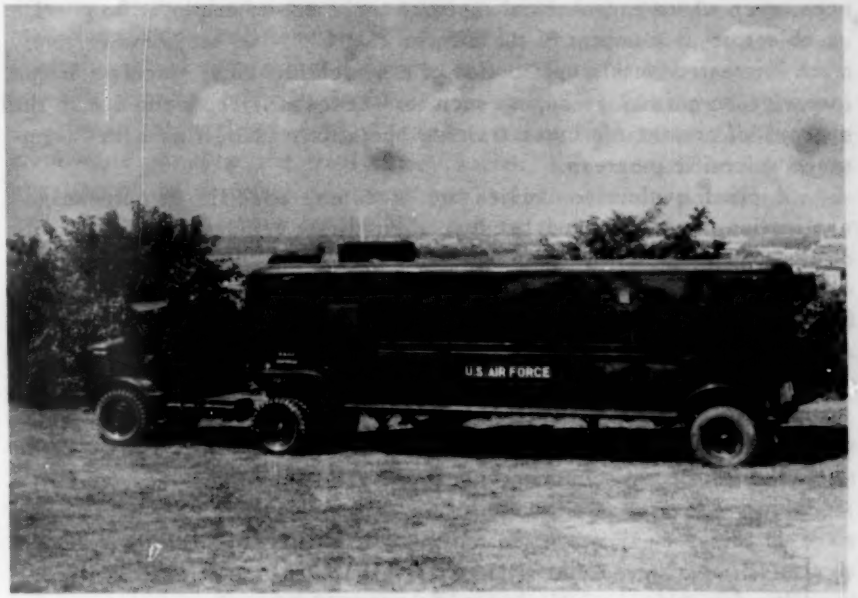

FIGURE 2. Trailer truck that has been adapted for use as a mobile theater for experimental film showings in situations where regular classroom or theater facilities are not suitable.

real training conditions. It's not a question of trying to generalize solely from results obtained in an air-conditioned theater to the very different situations that often exist in actual training.

Areas of Research

It is a truism that there are nearly as many ways of classifying research areas as there are classifiers. In attempting to provide some sort of perspective for the rather diverse kinds of research and development activity with which we are concerned I shall distinguish six purely arbitrary categories: (a) the evaluation of specific films, (b) observation of audience behavior, (c) development of equipment, (d) research methodology, (e) development of theory, and (f) experiments on specific factors that influence film effectiveness. Each of these "areas" of activity represents a considerable and, I think, important aspect of our research and development program. However, since there will not be sufficient time to discuss each area of work in detail, I shall attempt to describe the work in some of the areas fully enough to give a moderately comprehensive picture, and merely characterize or illustrate some of the other areas.

Evaluation of specific films. Evaluation of specific films is, as such, really a form of applied technology rather than a contribution to sci-

ence, even where experimental research technics are employed to provide an objective assessment of the effects of a film. We are, however, very much interested in this application of research technics, since we are an inservice organization and, as such, are necessarily concerned with the success of current Air Force training operations as well as with longer-range scientific progress.

Applied evaluative studies are of course specific in purpose and application, and—perhaps because their direct results are necessarily of limited generality—they have been somewhat slighted in recent discussions of scientific film research. For this reason, and despite the fact that evaluative studies do not constitute the major share of our own efforts, I should like to describe one or two studies of this sort so as to convey an idea of their possibilities and limitations.

A good example is provided by some films on jet airplanes, on which we did some intensive work. The first set of these films was designed to teach pilots certain information about the operation of a new Air Force jet plane. Several parallel films for different planes were also being made in this series, hence the results of the evaluation study of a particular film had somewhat broader importance than just saying whether the films for any one airplane would do a good job. Test results on the point-by-point information communicated by the film could be used to tell users of that film what the student pilots were going to get out of the film, and what they were *not* going to get, and hence what supplementary instruction might be needed in addition to the film. Further, it was also possible to apply the results of the research in the design of subsequent films of a highly similar kind on other airplanes.

In connection with these evaluation studies we have been interested in several methodological problems, particularly in investigating what can be done to predict the effects of a film *in advance*—before the film is completed. One of the things that was done was to take a film which was just about to be completed and make up crude preliminary visual aids from the storyboard art work. We got the art work, recorded a narration to it, and made the storyboard art work into a sound filmstrip. We used a sixteen-millimeter film-strip projector with a fast frame-changing feature, so we could use quite a large number of frames—one frame to represent each key scene in the whole film. Thus the presentation was closely similar to the final film except for the fact that it was a crude advance mock-up such as could readily be made well prior to the completion of the film.

Parallel groups were then tested, one group having been instructed by the final, Kodachrome, dressed-up motion picture, and the other by the crude, preliminary filmstrip. It really was crude, incidentally—most of the art work was sketched from the storyboard, and some of it

was just sketched on a blackboard and photographed. However, the work was done by a competent artist, so that it represented the content accurately, tho often in rather a sketchy and symbolic fashion.

We were not primarily interested, in comparing test data for the two groups, in the *average level of learning* attained by the crude film strip mock-up as against the final film. Rather, we were interested in the question of the correlation between how well the various points of information were got across by the film and by the parallel filmstrip. Accordingly, what was done was to compare the two groups question-by-question. One question, say, was about the rate of climb of the plane at twenty thousand feet; how well did *that* point get across in the *film*, and how well for the *mock-up filmstrip*? Then, another point—say, about stick control in a certain maneuver—how well did *that* one get across for each presentation? And so forth. Now, the question was: Could we *predict*, from the test results for the rough filmstrip, *which* points were going to get across and which ones were going to fail to produce significant gains in the final motion picture? Perhaps surprisingly, it was found, for this particular film, that the correspondence was quite good.

I certainly do not want to generalize from these particular results and make any bold claims that the effects of any and all motion pictures can be thus predicted. Quite the contrary—especially since the final film in this case, although it contained shots of the pilot's reactions, of zooming airplanes, and so forth, consisted primarily of technical information of essentially static character. The extent to which the effects of *other* kinds of films could be predicted by similar technic is one of the things we still have to investigate further.

Observation of audience behavior. A second area of research with which we are concerned is that of observation of the overt behavior of the audience. There are a number of time-honored devices which have been used to try to record audience reactions. Some of these have been very useful. They include, for example, the push-button kind of arrangement that has been used widely in testing radio programs for many years, and which Hovland, Sheffield and I used with films during World War II (5, Chapter 4). These push-button answer-choice systems—both the simpler ones and their more elaborate counterparts such as the classroom communicator at Pennsylvania State College (2) can be used either to ask people to rate the film while it is being shown, or to get them to react by answering quiz questions on the film content.

One of the characteristics common to these methods of obtaining audience reaction is that the audience knows that something is going on. And when the person in the audience is being interrogated with questions such as "How do you like this part of the film?" the measurement process may interfere considerably with the reaction one is trying to observe.

Accordingly, one of the technics that we have been working on, in order to get a more spontaneous, less self-conscious measure of audience behavior, is the taking of motion pictures of the audience during the film showing, using infra-red light in a darkened theater. Of course, these cannot tell anywhere nearly everything about audience behavior, but they do provide some systematic indications. For example, we are all familiar with the phenomenon of people going to sleep during a session of training films, but it is quite instructive to watch a filmed record showing the development of less extreme forms of inattentiveness, and, in some instances, to see the audience actually dropping off one by one as the film proceeds. One of the interesting questions that can be investigated with this technic is whether, if you inject a short rest break, or a short length of a more interesting film material as relief in the course of a relatively dull training film, interest and attention will perk up, and if so, how long the effects of this "shot in the arm" will last. These are some of the kinds of questions to which we are trying to get answers.

Obviously, however, the only *ultimate* objective of any training film is what it does to the audience in terms of the information it imparts, the subsequent behavior it motivates, the skills it teaches, and so on. Whether the film is liked or disliked, or whether people look at it appreciatively or attentively, is—for *training* films—only a means to that end. Thus, the observation of audience behavior is not an attempt to study the end outcomes of a film and is useful only if related to the effects of the film on *learning*. For this reason we always use more conventional measurement technics, such as prefilm and postfilm tests of factual information learned from the film, in conjunction with the observations of the audience's behavior during the showing.

Equipment development. A third area of activity sponsored by our research program is that of equipment development. Here, as research psychologists, we are a little outside our bailiwick; but there is obviously a very close interrelation between the effectiveness of a film in training and the effectiveness of the equipment that is available to utilize that film. Our most important equipment-development project exemplifies this relationship. We had been impressed by the possibilities of various daylight screen projectors, such as the TVA telekit projector, the Triangle projector, and others. All present film projectors or viewers, however, seem to fall short of what a really efficient shop or classroom teaching instrument should be. In addition to daylight projection, and the possibility of repeating a film, a classroom projector should have much more flexibility. Ideally, if you want to use the motion picture as a teaching aid it ought to have somewhat the same flexibility that a slide projector has. You would like to show a particular scene, and then, instead of going on with what the film producer intended, you want to skip the next section

(which, say, isn't very important for your particular class). Then a question comes up, and you want to go back to a previous sequence, and so on.

To meet this situation, as well as for several other purposes, we decided it would be important to try to develop a "magazine-loading" projector, for which the films would come in a magazine that you could insert and project as easily as shoving a book into a bookcase. Such a projector will not be designed to give ultra-high-quality theatrical projection, but merely to present a short clip of film, from a few seconds to a maximum of about five minutes. It will also, if desired, repeat at the end of a sequence and is designed to incorporate facilities for still projection of any desired scene without any serious loss of illumination. It will carry sound, so that narration or dialog can be used with the film, tho high-fidelity will not be sought, since one important objective is to make the instrument, if possible, mass producible at low cost. This magazine-loading film-viewer is being developed for us under contract with J. A. Maurer, Inc., the camera manufacturer.

Experimental methodology. A fourth area of research interest is the methodology of experimentation—the improvement of experimental design and research procedures to obtain more efficient and dependable research results. One example of such methodological work has already been described in connection with experimental film evaluation. A second example with perhaps wider implications arises in connection with the sampling rationale in classroom film experiments. From traditional procedures that have grown up in psychological research, and partly as an outgrowth of the great stress on individual differences, there is a tendency to say in any psychological or educational experiment that "N," the "number of cases," or number of observations, is the number of *people* tested. This doctrine grew up, to a considerable extent, in testing work for purposes of personnel selection and in experimental laboratory situations where one person came in and served as a subject in the experiment, then the next person came in, and so on. Experimental treatments in this traditional laboratory situation were thus carried out with each person, or subject, providing an independent observation. But, in practice, this is not the way film research is generally carried out. Rather, you often have to take a *class* of people, that has been preselected in some unknown way, and present them with a film *all at one time*. Under these circumstances it is generally quite illegitimate to regard the number of *people* as the number of independent observations. Rather, the number of independently tested *class groups* has to be taken as the number of independent observations, or "N," in computing your error estimates. We are doing some methodological work on this and similar questions, both from the theoretical point of view and from the standpoint of actually ex-

amining how much practical difference the use of individual-sampling statistics makes in certain kinds of group-sampling experimental situations. In some instances the failure to use the proper sampling unit makes for a very unhappy consequence in the outcome of the experiment—very misleading results can be obtained. How often this has been the case in previously published film research is hard to say, but I believe it might be salutary to review some of the data underlying currently accepted findings from this point of view, or else to replicate important studies with a design that permits testing the significance of the results in terms of the sampling procedures actually employed in the experiment, rather than in terms of a rationale of "let's not, and say we did."

Development of theory. These days it is common to say that long-range progress in psychological or educational research requires a close integration between theory and experimentation, and that development of a more adequate theory structure is a prerequisite to continued fruitfulness in experimental work. This point of view is certainly shared by the personnel of the Air Force audio-visual research team, altho we are aware that it is much easier to talk about the need for better theory than it is to make really significant contributions to theory development. Our own efforts in this direction have been of three kinds: first, in attempting to define the factors that are manipulated in current experimentation, when possible, in terms of relatively basic psychological variables; second, in attempting to tease out implications for more effective film presentation from relevant existing theoretical systems; and, third, in sponsoring explicit attempts at theory construction as such. Only a brief characterization of these kinds of work can be given within the present paper.

The first kind of emphasis on theory underlies a good deal of our past, current, and planned experimentation, and will be illustrated presently. The most systematic effort thus far in the second kind of theoretical work has been that of Drs. T. S. and H. H. Kendler, under our contract with New York University. They have attempted to elicit a number of specific predictions about the effective design and utilization of audio-visual aids from current reinforcement theories of learning. A report on this work has been published (7), and several experiments have been designed that bear on the predictions made on this and related theoretical bases.

The last and undoubtedly most difficult kind of theoretical work is exemplified mainly by the work of Professor J. J. Gibson, under our Cornell University contract. Gibson has attacked the problem of developing a basic theoretical account of pictorial perception that will contribute to a better understanding of both still and moving picture representations as employed in visual aids. A first statement of this theory has

been given limited circulation for review and criticism, and a revised formulation will be published in the near future. Meanwhile, several experiments are being conducted to test implications of the theory.

Experiments on specific factors in film design and utilization. The last area to be considered is that of controlled experimental studies in which factors in training film content or film utilization methods are systematically varied in field or laboratory experiments. In terms of total amount of research effort, this represents the largest single component of the Air Force audio-visual research program. Basically, the pattern of these studies involves the design and preparation of materials for several alternative film treatments or presentation procedures. These are then utilized in experiments designed to compare the amount of information, knowledge, skill, etc., that each of these treatments conveys to one of several parallel groups of students or trainees. The need for experiments thus employing controlled variation of content or procedure as a sound basis for empirically grounded principles of audio-visual instruction was pointed out by the writer (9) in 1947 and has also been emphasized by Carpenter (1) and by Hovland, Lumsdaine and Sheffield (5). A number of such experiments that had been carried out at Yale, Pennsylvania State College, and elsewhere prior to the activation of the Air Force program have been summarized by Hoban and Van Ormer (4, especially Chapter 8). In the Air Force audio-visual research program experiments of this kind are, where possible, integrated into a concerted attack in specific subareas. They are conducted both on an inservice basis and by contract research, utilizing both military and suitable civilian student populations as subjects. Some of these experiments are quite extensive and require the testing of several thousand trainees tested in class groups of anywhere from 15 to 70 or more persons per group.

Within the confines of this brief presentation it is not feasible to describe or even summarize the variety of experimental studies encompassed to date by this phase of our work. Included in this category have been experiments on the value of overlay animation and related devices, on varied or identical repetition and other factors influencing the effectiveness of intrafilm repetition, on the effects of specific types of introductory and summarizing material in various combinations and on variations in the style of narration and its relation to pictorial content under various conditions. Other experiments have dealt with the optimal placement of review passages, the use of content-structuring titles between successive film sequences, the comparative utility of alternative forms of pictorial test materials and procedures, the effectiveness of various pictorial and verbal combinations for teaching foreign language terms, and a number of other factors in film construction and utilizn-tion that are believed to be related to educational or training effective-

ness. For many of these studies final reports are not currently available in published form, but periodic mimeographed progress reports have been prepared which cover both completed and ongoing studies. These reports, prepared as an audio-visual "Shop Talk" bulletin, are classified for restricted circulation and are designed primarily for the information of those who are engaged in or otherwise intimately concerned with experimental research in the audio-visual area. Most of the final reports will, however, be available for more general circulation.

Some of the topics of experimental inquiry mentioned above have been the object of previous investigation by others. Each topic, certainly, is in need of still further study, for an initial study of any factor related to educational effectiveness seldom does more than break ground for further, more intensive inquiry. Promising early research salients need to be followed up with supplementary attacks that form a more or less integrated and progressive subprogram of research which can attempt to pin down the basic factors involved in a particular utilization procedure or filmic device. In concluding the present account, I would like to describe one series of investigations which I feel is beginning to approximate this kind of attack. This is a series of studies concerned with what has been described as the audience participation or active rehearsal procedure.

Educational psychologists have long been familiar with the general notion that students can learn more rapidly and efficiently if they are required to rehearse or recite actively the material to be learned. Studies such as the widely cited experiment of Gates (3) have particularly interesting implications for instructors who employ audio-visual materials such as films, because of the justifiable suspicion that film presentation may often suffer from being a passive, one-way medium.

Experimental evidence on the advantage of a technic for fostering *active rehearsal* of film-presented material (as opposed to mere passive review), was obtained during World War II and is reported in detail by Hovland, Lumsdaine and Sheffield (5, Chapter 9). Using a sound filmstrip on the military phonetic alphabet, it was found that much better learning occurred if the conventional passive review of each section of the alphabet, following initial presentation of the letters, was replaced with an active-rehearsal type of review in which the audience was required to recite aloud, more or less in unison, during the review sequences. This finding was subsequently replicated by the writer and his colleagues in an experiment conducted at Yale University, and in another experiment at Yale the value of inserting participation questions into a film was also shown with a film using a more complex conceptual subject matter (13). Subsequently, Jaspen (6) at Pennsylvania State College reported that analagous participation procedures contributed to learning of a manual operation (assembly of a mechanism) from a dem-

onstrational film when sufficient prior demonstration was given. Data obtained by Roshal (12), on the other hand, did not reveal any significant increase in effectiveness when trainees were told to practice during a filmed demonstration of knot tying. We are currently designing an experiment to tie some of these previous results together by varying the kind of opportunity the learners are given for practicing the task correctly. In the meantime, several further studies have been conducted under our contract at Yale University which have studied the basis for the participation procedure's effectiveness from a slightly different tho related angle. In the first of these experiments Kimble and Wulff (8) varied the amount of guidance given during participation exercises in filmed instruction on reading the slide rule. Participation exercises that gave more guidance (i.e., hints on how to perform correctly) were found to be the more effective. Two follow-up studies employing further variation in the distribution of guided practice and demonstration are currently in progress at Yale, and the interaction between repetition and active review procedures is being studied by Kendler at New York University.

In the original wartime experiment and in several other participation studies the so-called audience participation technics were built into the film by use of appropriate visual material and accompanying narration; in some later studies, however, the technic has, partly as a matter of convenience, been introduced as a utilization procedure by having the instructor intersperse short active rehearsal sessions between sections of an existing film. One study in which this was done has been reported recently by Michael and Maccoby under our contract with Boston University (11). This important investigation dealt with a question that is basic to an understanding of the psychological factors operative in active-rehearsal or participation devices—namely, to what extent their value is dependent on the effects of sheer practice, as such, and to what extent it depends on the incentive or motivational aspects of the technic. The former has been the main concern of several studies just mentioned, although part of the rationale for the original procedure used by Hovland, Lumsdaine and Sheffield was to provide an incentive to learn succeeding portions of the material. Using a film that presented a number of discrete items of information on defense against atomic attack, Michael and Maccoby studied the question of the relative influence of incentive effects versus direct practice effects by arranging review question-and-answer procedures in which only *half* of the material to be tested for each segment of the film was covered by the participation questions. If direct practice is the main factor in the effectiveness of the participation technic, we should expect the effects of the technic to show up only for that half of the material on which explicit practice was required. However, if motivational or incentive effects are operat-

ing, there should also be a gain, tho perhaps a smaller one, on the other half of the material (that was not covered by the practice sessions). The results of both the initial Boston study and of a later study by the same investigators showed appreciable gains only for the material that was covered by the participation questions.[2] These findings, supported by some incidental findings of a previous Yale study (13), certainly document the importance of the direct-rehearsal factor. Taken together with the later Yale studies (e.g., 8) they suggest strongly that the dominant factor in the participation procedures studied is not just participating or the obtaining of *some* form of active response by the learner; that, rather, the critical thing is *what* response is fostered, and that the most effective procedure is the one that best elicits correct rehearsal, during the film session, of the patterns of response that are to be learned.

It should also be noted, however, that in the second Boston study, as well as in the earlier experiment at Yale (13) some less pronounced effects interpretable in terms of incentive factors were also indicated when the questions interspersed between sections of a film referred to material in the *following* section of the film rather than to material already presented. But there is still a very great deal to be learned about the operation of such factors and how to implement them effectively. Thus far their effects have not been found to be commensurate with the gains attributable to direct practice.

The first Boston study (11) also sought an answer to another question of considerable practical importance, namely, whether covert or mental participation procedures could be utilized with success comparable to that found for overt-response procedures. If so, gains in effectiveness could be effected even in situations where, for one reason or another, simultaneous overt response of a class group would not be feasible. Results showed a gratifyingly large gain from a covert-response procedure in which the audience was instructed only to think the answers to the questions rather than responding more overtly. Additional data on the conditions necessary to achieve this result, as well as a replication of the findings on direct practice versus indirect or motivational effects with a different subject matter, are being obtained in further experiments.

Altho I have not discussed all of the experiments that have been done with audience participation or active rehearsal procedures, perhaps I have illustrated what I meant in speaking of a concerted attack in a

[2]It is to be noted that the two halves of the material tested were discrete items of information. Absence of motivational carry-over would not, of course, preclude transfer of practice on specific examples of a procedure to performance on other examples of that procedure. Such transfer was clearly evidenced in fact in participation exercises on reading slide-rule scales in the previously cited experiment by Kimble and Wulff (8).

particular subarea of research. I believe it is largely by this kind of concerted attention to some of the more potent kinds of filmic devices and procedures that we shall progress to a clearer definition of the basic variables involved in film-mediated learning and, hence, to increased ability to predict and maximize the effectiveness of films and related audio-visual communication media.

We are strongly convinced that progressively better definition and isolation of variables is essential to continued research progress. The term participation as used above is clearly only a convenient rubric for characterizing a general kind of procedure; it is certainly not, as such, a primary variable in the psychology of learning from audio-visual media. (The same is of course also true of most if not all of the other factors, topics, and so-called variables on which film experiments have been conducted—animation, rate of development, verbalization, and the like.) The fact that various procedures labeled as active practice procedures or participation procedures appear to be highly effective in some instances and less effective in others indicates more than a need for qualified, contingent generalizations that take situational and audience factors into account in making predictions. It also points to the need for both theoretical and experimental advances that result in better definition of the terms of audio-visual rhetoric. We shall continue to have confusion as long as we comprehend several different processes with a single term and vice versa. I believe the way to reduce the incidence of such confusion in the design and interpretation of experiments is not just thru semantic clarification but thru experiments which seek to reveal the basic psychological processes that underlie the effectiveness of a given device or procedure. This is no easy task, and it is one in which most of the progress still lies in the future. Meanwhile, pending better identification of basic process I believe it is more useful as well as more accurate to speak in operational terms of specific procedures and devices rather than in terms of pseudo-variables. For example, until we have still further clarified the operation of incentive factors and of both explicit and implicit practice or rehearsal, I think we shall do better to speak in terms of specified participation *procedures* rather than to reify Participation as a variable. I think the critical need in our area of research is not for experiments which merely manipulate half-defined complexes of unidentified factors and draw important-sounding conclusions about the effects of the variable by which the experimenter chooses to label these aggregates. Rather, I believe the critical need is for experiments that both flow from and lead toward a better identification of real psychological variables in basic perceptual and learning processes as these apply in the highly complex audio-visual media of mass communication and training. The recognition of this need is a basic orienta-

tion that must tie together the last two research areas I have outlined in describing the Air Force audio-visual research program. By basing successive phases of experimentation as directly as possible on advances in theoretical conceptualization as well as on the implications of prior research results I believe it will be possible to make considerable progress in the next few years in the direction of better identification of basic variables and the experimental analysis of their operation. I also believe that this is the direction which, in the last analysis, will be of the greatest practical value in the sense of being most productive of a solid basis for consistent, substantial gains in the effectiveness of audio-visual communications for public education and for military training.

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TEACHER COMPETENCE IN THE USE OF AUDIO-VISUAL MATERIALS

• FREDERICK A. WHITE

The problem, "How competent are teacher education graduates in the use of audio-visual materials?" is an important one for teacher educators. This study casts some light on the problem, particularly as it refers to graduates who have had no formal audio-visual instruction.

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The purpose of this study was to try to determine how effectively the University of Wisconsin School of Education prepares its four-year graduates to use certain selected audio-visual methods and materials and how well that preparation meets the requirements of the supervisors under whom such teachers begin their teaching. The selected audio-visual media were: (a) the chalkboard, (b) the 16 mm motion-picture film, (c) the filmstrip, (d) the opaque projector, (e) the magnetic recorder, and (f) the radio. They were selected only because it was felt that they were among the important audio-visual media.

Among the questions for which the answers were sought were:

1. Do the four-year graduates of the University of Wisconsin use these selected media in their teaching?
2. At what performance level do these graduates use these media?
3. Where do these graduates believe that they learned to use these media?
4. Are these graduates cognizant of their own deficiencies?
5. What inservice training do these graduates receive during their first year of teaching?
6. What competencies do the supervisors of these graduates believe that beginning teachers should have in the use of these selected media?

The study was limited to the University of Wisconsin School of Education so that it could be used as a basis for suggested improvement of the Wisconsin program if deficiencies were indicated and so that the study could be more closely controlled and be more intensive.

The conference of 15 specialists in teachers education and audio-visual education held in the United States Office of Education in 1949 selected four recommendations as being the most important next steps (1). They are:

1. Teacher education institutions must make certain that their graduates are prepared to use audio-visual materials in their teaching.
2. Teacher education institutions which do not now have audio-visual centers should establish them and use them as laboratories for the distribution of audio-visual materials.
3. Teacher education institutions should take the responsibility for helping school systems on inservice educational programs with special reference to audio-visual materials.
4. Teacher education institutions should select the most effective instructional materials.

There was a plan in effect in the University of Wisconsin School of Education which was supposed to produce the competencies anticipated in the first of these recommendations. It was an integrated approach depending upon the full sequence of education courses. Courses in audio-visual education had been offered at the University of Wisconsin, but prior to the time this group graduated all such courses had either been taught during the summer sessions or in extension and were thus generally unavailable to the regular four-year graduate. Only two teachers in the experimental group had had a formal course in audio-visual education.

No formal attempt had been made to follow-up a group of recent graduates to thus determine if they were being prepared in such a manner as to produce effective use. This study attempts to do such a follow-up.

Procedure

The first phase of this study was to determine the larger goals in the area of audio-visual education for all the teachers being prepared at the University of Wisconsin. Thru a series of group and individual meetings with those faculty members involved in teaching the general sequence of education courses, and thru a review of available statements of goals such as that of Noel and Leonard (2), the following statement of goals was agreed upon:

1. An understanding of child development and learning as significant for audio-visual technics.

2. A knowledge of how to improve learning thru the use of audio-visual materials.
3. The ability to operate such types of audio-visual materials as can be profitably used in a given field.
4. The ability to use audio-visual methods and materials to set up a good learning situation.
5. A familiarity with the basic audio-visual materials in a given field and a knowledge of their sources.
6. The ability to find and evaluate suitable audio-visual materials.

These goals were used as a basis for determining the general areas to be included in this study.

Data for the study were obtained by personal interviews with some 125 1951 University of Wisconsin graduates who were teaching in Wisconsin schools and by interviews with their most immediate supervisors. The interviews were held during the last two months of the school year and at the school in which they were teaching. The questions asked followed a prepared interview-questionnaire on which it was possible to record quickly the answers given. The questions asked were worded so as to give as little cueing to desirable answers as possible. In addition to the individual items of information recorded an important part of the study was the determining of a level of performance for each of the six audio-visual media for each of the teachers.

Six possible levels were described for each of the media. In each case Level VI was the desirable and an easily attainable level. It was simply the level which might well be achieved by all teachers if they were well prepared and desirous of being good teachers. With such a definition, if the percentage of teachers interviewed who are judged to be functioning at Level VI falls significantly below 100 it would indicate a failure in the preparation of the teachers interviewed.

Level V was described as an average use level—not good and yet not bad. It was definitely a level leaving much to be desired and is not descriptive of good teaching. Those teachers judged to be functioning at this level, or any one of the four lower ones, must be thought of as either teachers who have not been adequately prepared, not interested or capable of reaching a desirable level, or unfortunate enough to teach in a situation that does not provide the materials for those teachers who want to use them. Level IV was described as the lowest level where the media was actually used. It was more misuse than use. Level III was described as that situation in which the media was not available to the teacher and that level was assigned only if absence of the media was indicated by the supervisor as well as the teacher. Level II was used to describe those who had not explored the availability of the materials. Level I was left

for those individuals who simply did not make use of the media even tho they had been informed of its availability.

Table I gives the complete description of the performance levels as they were written out for the 16 mm motion-picture film. Similar descriptions were written up for each of the other five media and were referred to by the researcher immediately after each interview as the performance levels were being decided upon. In determining the level which best fitted the particular teacher's performance the greatest emphasis was always placed on actual utilization.

TABLE I

COMPETENCY LEVELS—16 MM MOTION PICTURES

LEVEL VI	*Selection:* On basis of previous knowledge or by careful searching; knowledge of several good sources; final selection based on accepted evaluation principles.
	Utilization: Always previews or has intimate knowledge from previous viewing; does vocabulary work if at all necessary; careful preparation of students; re-shows if need exists; used as an integral part of the learning situation; follow-up work explored.
	Evaluation: Written evaluations for future use; evaluation on accepted principles; methods of utilization evaluated.
	Operation: Operates with no fear; gets very good projection results; is able to teach others to operate; realizes the need to make operation as unnoticed as possible.
LEVEL V	*Selection:* Found by search of materials already in that school but including BAVI (Wisconsin) catalog; limited knowledge of sources.
	Utilization: Usually previews or has seen films before; gives only a brief introduction; some discussion afterward; little or no follow-up.
	Evaluation: Informal evaluation of both film content and method of presentation.
	Operation: Operates but not confidently; prefers to have someone else do it.
LEVEL VI	*Selection:* Films ordered by others; uses films obtained for other teaching purposes, very limited knowledge of sources.
	Utilization: Seldom or never previews; little or no introduction of film; limited student preparation; uses films for other than basic teaching purposes.
	Evaluation: Concern ends with showing of film; no evaluation of film or utilization procedures.
	Operation: No knowledge of operation or has forgotten and not relearned; does not operate the projector.
LEVEL III	Equipment not available to the teacher.
LEVEL II	Availability of equipment not explored by the teacher.
LEVEL I	Equipment available but not used by the teacher.

Two specific technics were used to keep the study objective and reliable. As frequently as possible the interviews were tape-recorded and the tapes used later to check the data recorded. Also, a random sample of the recorded interviews were gone over by a qualified independent observer and levels were assigned. The correlations between these levels and those of the researcher ranged from 0.52 for the chalkboard levels to 0.97 for the filmstrip levels.

From the original list of 145 teachers' names, 106 pairs of usable interviews with a teacher and her supervisor were obtained. The others either had left the teaching field, had had additional college training during the summer, were not in classroom teaching situations or either the teacher or supervisor was not at the school on the day the interviewer called.

For each of the media the graduates were asked if they had used it during the school year, the frequency with which they had used it, the purposes for which they used it, the manner in which they had used it, where they believed that they had learned to use it, whether or not they felt adequately prepared to use the media, and how they felt that they might have been better prepared. Their supervisors were also asked if the teacher had used the media, what inservice help had been given the teacher in its use, whether or not they believed the teacher had been adequately prepared and what they wanted beginning teachers to know about that media.

Results

The levels on which the 106 teachers were found to be using these six media are shown in Table II. It gives the percent of teachers at each level and the median usage level.

TABLE II

PERCENT OF THE 106 TEACHERS PERFORMING ON THE VARIOUS LEVELS

Level	16 mm Films	Chalkboard	Filmstrips	Magnetic Recorder	Opaque Projector	Radio
VI	6.6%	9.4%	3.8%	7.5%	0.0%	0.9%
V	**50.9%***	**67.0%***	17.0%	18.9%	3.9%	9.4%
IV	26.5%	23.6%	17.0%	14.1%	1.8%	26.5%
III	0.9%	0.0%	4.7%	**10.4%***	35.8%	5.6%
II	2.8%	0.0%	6.6%	8.5%	**25.4%***	5.6%
I	12.3%	0.0%	**50.9%***	40.6%	33.1%	**51.8%***

*Bold face numbers indicate median level.

All the teachers reported using the chalkboard. The percent judged to be using it at Level VI was 9.4, that at Level V was 67 percent, and at Level IV 23.6 percent. Less than 10 percent indicated that any of

their college teachers had ever taught them anything about chalkboard usage and this could account in part, at least, for the small percent at Level VI. Sixty-one percent stated that they had felt inadequately prepared in the use of the chalkboard and most of these thought the situation could have been improved if a unit on chalkboard use had been included somewhere in their college preparation. The supervisor's answers to questions indicated that they had not devoted much time or thought to the matter of chalkboard usage but in only 24 of the 106 cases did the teacher and supervisor both agree that the teacher's preparation had been adequate.

For the 16 mm motionpicture the percentage at the various levels were: Level VI—6.6, Level V—50.9, Level IV—26.5, Level III—0.9, Level II—2.8, and Level I—12.3. The 6.6 percent at Level VI (7 out of 106 teachers) were the only ones who consistently previewed films before using them, who spent any significant amount of time preparing students to see the films, or who engaged in any effective follow-up activities. Seventeen of the 106 had not used any films and in only one of these cases was it because of not having a projector available. One teacher said, in reference to the preparation at the University of Wisconsin, "We were repeatedly impressed with the need of using audio-visual materials, but we were not told how to use them." Many others expressed the same idea.

For those teachers who used films the median number used was 8. The media for Level VI was 12, for Level V it was 10, and for Level IV it was 5.5. The range for Level IV, the lowest usage level, was 1-50 and for Level VI, the high level, it was 2-30.

Sixty-six of the 106 said that they had felt adequately prepared to use films in their teaching when they started to teach, and 63 of the 66 had used films. Forty said that they had not felt adequately prepared, and only 28 of these had used films. In 28.3 percent of the total cases the teacher and supervisor agreed that the teacher had been adequately prepared. The statements of the supervisors indicated clearly that they want beginning teachers prepared to use effective utilization procedures. By this they meant preview on the part of the teacher, preparation of the class by the teacher before showing, careful follow-up procedures and evaluation of both film and teaching procedures.

The percentage of teachers placed in the high level of usage for filmstrips was 3.8, and 62.2 percent fell into one of the three non-use groups. The reasons given for not using filmstrips were, in 90 percent of the cases, ones indicating an almost complete lack of knowledge of them. Teachers cannot be expected to use materials with which they are not familiar.

The percentages of teachers placed in the high level group for the remaining three audio-visual media were: magnetic recorder—7.5 percent,

opaque projector—0.0 percent, and radio—0.9 percent. In each case well over half were in the non-use groups.

For all these remaining three media the teachers' lack of knowledge of the media was given as the chief reason for not using it, and for each media over half of these teachers reported a feeling of being inadequately prepared to use them.

The answers to the questions about knowledge of sources of such media as films, filmstrips and radio programs indicated that the materials which the teachers did use were not ones with which they had become familiar as a result of their college preparation.

The teachers reported that the inservice training they had received during the year had done comparatively little to bring them up to a desirable performance level and the answers given by their supervisors verified this statement. The best that was done was to give information as to the availability of media and to offer instruction in operation. All too often even this was not done.

The median use levels are indicated on Table II. It shows that the median level for the chalkboard and 16 mm motion-picture was Level V. For the magnetic recorder it was Level III, for the opaque projector it was Level II, and it was Level I for the filmstrip and the radio.

Since the graduates interviewed were from various major subject areas the data were examined from that viewpoint. Included in the required sequence are the teaching methods courses and practice teaching. With preparation to use audio-visual methods depending on an integrated sequence there could be considerable variation due to the different methods course teachers and practice teaching supervisors. However, none of the groups stood out to good advantage in any of the six selected media. The group of English majors who had a joint major in some other field was the best of the groups.

Conclusions

The conclusions reached as a result of this study were these:

1. As a group these teachers (only two of whom had had an audio-visual course) did not use all of the audio-visual methods and materials at their disposal.

2. Those teachers who did use the six audio-visual methods did not perform at the highest levels of usage.

3. These teachers were cognizant of their own deficiencies in the area of audio-visual methods but only to that point where their knowledge of the methods would allow them to realize and recognize their deficiencies.

4. The inservice training programs now found in schools such as those in which these teachers taught cannot be depended upon to provide competency in the area of audio-visual methods.

5. The attitude of these teachers and their supervisors toward the subject of audio-visual methods and toward the interviewer in this study was a very pleasant and encouraging one. It leads to the strong belief that all concerned are eager to have teachers better prepared to use audio-visual methods than were members of this group.

6. The supervisors believe that beginning teachers should be fully prepared to use audio-visual methods when those teachers leave college. The supervisors want the teachers they select for their schools: (a) to be acquainted with the materials that apply to the teacher's own fields, (b) to be competent in the mechanical aspects of the materials, (c) to understand and appreciate the pedagogical values of audio-visual methods of producing a more effective learning situation, (d) to know how to use them so as to achieve most effectively their inherent values, and (e) to know how to evaluate the methods and the results they produce.

As a result of the study it has been recommended that the current plan whereby the four-year graduates of the University of Wisconsin School of Education are prepared to use audio-visual methods of implementing the curriculum be reviewed and amended. It is also suggested either that: (a) one of the present required sequence of Education courses be revised to include a unit sufficiently long to cover the audio-visual content common to all teaching areas and the methods courses include a unit dealing with the content applicable primarily to that teaching area; (b) amend the methods courses so they will provide adequate preparation; or (c) recommend that each preservice teacher take a complete and separate course in audio-visual instruction.

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NEEDED RESEARCH IN AUDIO-VISUAL METHODS

• WALTER A. WITTICH

We have little research evidence to support the use of audio-visual materials in specific subjectmatter areas, yet this is one of our greatest needs. Walter A. Wittich performs a service in this article by listing a number of studies that should be made in subjectmatter fields.

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The period of 1920 to 1930 was the decade during which the silent motion picture film came to the attention of educators. It was during this period that educators sought to measure the effectiveness of this new medium of communication in terms of learning outcomes in the areas of general science, geography and history (2).

While the audio-visual experimental investigators of the 1920's acknowledged that the teaching materials with which they worked were new and often experimental in nature, certain positive conclusions were established:

1. Children using films in instruction learned increasing amounts of information.
2. Film-learned information was retained over a longer period of time.
3. Teachers reported that film use resulted in heightened interests, greater enthusiasm for school activities, and more pupil-initiated supplementary reading.

Between 1930 and 1935 sound was effectively added to the old silent motion picture format. A new teaching material became available for limited areas of classroom use. The experimenter of this period was careful to acknowledge that only limited materials existed, and in some instances specifically prepared 16 mm sound motion picture films were created for the use of the experimenter as he sought to enrich classroom learning situations (4).

The sound motion picture film offered new possibilities for the improvement of classroom learning situations. A new cycle of educational film research, particularly in the field of experience enrichment, was begun. Investigators such as Frances Consitt, V. C. Arnspiger, C. C. Clark, Phillip Rulon, William Westfall, Harry Wise, John Elmore Hansen, and others planned and executed researches which dealt with the sound motion picture film in its relation to information learning and to developmental thinking.

In general the research during the 1930's was undertaken in an effort to answer such questions as these:

1. Has the educational sound motion picture film proved a useful supplementary teaching material thru which to provide readiness for learning?
2. Can traditional subject content be effectively learned thru sound motion picture means?
3. Is information learned thru educational sound motion picture films retained as effectively as when learned thru traditional verbal methods of classroom instruction?
4. Do 16 mm sound motion picture films prove as effective with learners of low ability as with learners of high ability?
5. Does the use of carefully selected 16 mm sound motion picture materials affect reading performance in a positive manner?

Anyone willing to analyze the researches of this period will find that affirmative answers have been brought forth particularly in the case of 1, 2, 3, and 5 above.

The war years of the beginning 1940's curtailed research of a specific classroom pattern. Investigations of the kind necessary to determine the use of film materials in mass training operations quite naturally were taken up within the Armed Forces. For the best information about this type of research, see Hoban (3) and Carpenter (1). This paper paper concerns itself primarily with research pertaining to the film in public education.

Due in no small part to the impetus which has been gained thru the attention given audio-visual methods during World War II and to the steady scrutiny being given educational procedures in the public schools of the nation, it is to be expected that planned educational sound motion picture film research would be resumed in university and college centers of audio-visual education following 1945.

Contemporary Current Research Trends

Following World War II, school administrators once again turned serious attention to scrutinizing the role of audio-visual technics in the

improvement of instruction. Growing naturally out of such interest, research studies carried on in audio-visual technics of three general types were resumed:

1. Surveys into the status of audio-visual programs in selected cities, counties, and states.
2. Historical and philosophical studies leading to proposed optimum plans and procedures for instituting new programs of audio-visual education for cities, counties or states.
3. A continuation of investigations into the utilization and learning outcomes of audio-visual methods and materials.

The writer, with the assistance of a graduate seminar group, sought to investigate the trend in contemporary research during the 1950–51 school year as evidenced by graduate degrees granted in the field of audio-visual education and specialization. The directors of major audio-visual departments in colleges and universities were invited to submit the titles of Master's degree and PhD dissertations accepted or pending during the 1950–51 term. Completed theses were secured for reading and study.

Twenty-eight theses were studied. These covered the areas of audio-visual administrative organization, teacher-training practices, and utilization, and were completed in institutions of higher learning from coast-to-coast. Eleven of these theses sought to examine the status of state and local audio-visual programs in terms of professional training of personnel, budget, and the possible interests of teacher-training agencies in the field of audio-visual education.

Seventeen of the studies were investigations into the role of audio-visual materials and technics in the improvement of specific subject-matter areas. Fortunately, in my opinion, the researches undertaken in this area exceed the number undertaken in the first area. The nature of utilization research seems to be becoming more objective and more carefully defined. Technic problems such as the role of the tape in teaching speech, the use of films in teaching chemistry, the use of slides in instruction in football are examples of such carefully delimited and tightly structured investigations.

The Present Status of Audio-Visual Research

Audio-visual education as a concept of effective teaching method is a comparatively young area of professional education. If we were to draw up a list of efficiently planned and accomplished professional research studies in the field of audio-visual education and compare it with the research literature currently available in the fields of reading, social studies, language arts, arithmetic, etc., we would see at a glance that audio-visual research is by comparison very "sketchy."

It is true that in the short space of 25 years great strides have been made in audio-visual education. Because of this, our responsibilities today must be to accelerate the pace of audio-visual research, not in the direction of establishing audio-visual education as a professional education area *per se* but in the direction of investigating and establishing the role of audio-visual materials as they effectively assist in the implementation of specific goals in general education. I know of no comprehensive or definitive research, for example, in the area of social attitudes and audio-visual methods. We have pitifully little to report to reading specialists about the role of audio-visual materials in vocabulary development, reading comprehension, or reading rate. I cannot cite a single study in the area of arithmetic readiness or skill accomplishment. Tho we make films and filmstrips in that area, we have not, to my knowledge, tested them in a way convincing to the scrutiny of the professionally trained mathematics methods person.

Our ranks are filled with competent school people, certain and sure thru their own observation that audio-visual methods work and are effective. However, when I attempt to draw together tangible evidence to support an argument for the use of audio-visual materials in specific subject areas: primary language arts, intermediate-grade social studies, junior high-school mathematics, or high-school science, I must admit I can find at best one, two, and in a few instances three "solid" investigations, and these usually older than ten years.

Our greatest necessity is to conduct searching, validly structured researches in the role of audio-visual materials as they may effectively accomplish long recognized objectives in the traditional subject areas with which our schools are so concerned:

Arithmetic
Art
Biology
Chemistry
Civics and Citizenship
Commercial Subjects
Conversation
English and Language Arts
Foreign Languages
General Science
Geography and Geology
Guidance
History, Economics, Social Problems, and Democracy
Home Economics
Industrial Arts
Mathematics
Music
Natural Science
Physical Education
Physics
Physiology, Health, and Nursing
Psychology and Teaching
Reading Readiness
Safety
Social Studies

As I counsel with graduate students, I advise them to coordinate their investigations into audio-visual methods with their subject inter-

ests. The possibilities for study are almost limitless. No field of education enjoys the luxury of contemplating the entire field of education for its studies. One may become intrigued with the possibilities; here are a few:

Primary Level

1. What is the effect of a given group of educational sound films, properly used among beginning first-grade children, on the establishment of reading readiness?
2. What is the effect of selected educational sound films among second-grade children as measured in terms of creative thinking developed both orally and in writing, and in terms of interest in observation and reporting?
3. What is the extent to which selected educational sound films bring about desirable concepts among third-grade children pertinent to the understanding of a global society?
4. How does film experience affect the facilities of young learners? in the area of oral expression? in creating experience charts? in written expression? in general conversation patterns? in art expression?

Intermediate Level

1. Can the arithmetic processes be more meaningfully taught by filmic demonstration involving animation?
2. What is the role of carefully selected sound motion picture films in the inciting of interest in expressing oneself orally? in writing? What effect, if any, would be noted in changes in quality or speed of handwriting?
3. What is the role of the 16 mm sound film in helping to establish acceptable attitudes of one worldness toward "foreign" cultural groups?
4. What does the realism of filmic portrayal accomplish in meeting socially useful and desirable social studies goals?
5. Can the 16 mm sound film provide learning readiness experiences (so easily accomplished in the primary grades) in anticipating reading accomplishment in the intermediate grades?
6. Can creativeness in art expression be effectively influenced thru the use of carefully selected 16 mm sound films?

Junior High School

1. What is the extent to which selected educational sound films influence thinking and behavior among seventh-grade pupils, particularly in terms of tolerance, inter-group relationships, etc.?

2. To what extent are permanent gains in music appreciation achieved thru the use of selected educational sound films at the junior high-school level?
3. To what extent do selected educational sound films influence health attitudes and habits more or less than do traditional methods of teaching in ninth-grade physiology study?
4. To what extent are the formation of socially desirable, global social attitudes achieved as the result of using selected educational sound films and traditional teaching methods among seventh and eighth-grade students?

Senior High-School Level

1. What is the effect of selected educational sound films on the vocabulary, oral and written expression development of tenth-grade English pupils?
2. To what extent is retention and assimilation of facts and concepts in botany, chemistry, and physics assisted or impeded when motivated by selected educational sound films as a supplement to traditional classroom methods?
3. To what extent does the use of selected educational sound films reflect rapidity of learning, work technics, and work output in senior high-school shop classes?
4. How are attitudes toward war and peace influenced thru the use of films in problems of democracy classes?
5. What is the effectiveness of selected educational sound films among twelfth-grade government or economics pupils?

The above are a very few of the important and highly fascinating opportunities of study which we must undertake in the present and immediate future. How fortunate the researcher in audio-visual education to be confronted with such a vista!

The Challenge

The great opportunity for the professional worker is not in the direction of establishing himself as a separate entity; rather, his is the fortunate role of being indispensable to the subjectmatter specialist. To improve instruction; to enrich existing learning environments; to help learners to understand clearly and lastingly; to record the world environment to the learner thru the vividness, reality, and plausibility which the 16 mm sound film can accomplish—that is the goal and the opportunity and the reward of the professional researcher in audio-visual education.

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TELEVISION AND EDUCATION: A REVIEW OF RESEARCH

• JAMES D. FINN

To the knowledge of the editor, this is the first comprehensive review of educational television research to be published. The organizing of the research into four categories—general social effects, content analyses, educational effects, and technical problems—the rather detailed reviewing of the results, and the drawing of general conclusions should greatly aid the educator in understanding the unique contributions of educational television.

An attempt will be made in future issues of Audio-Visual Communication Review to supplement this review of research by regularly publishing, in "Research Abstracts," reviews of the most recent television studies.

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Television is the product of research. Until this decade, however, almost all research activity was confined exclusively to the scientific and technological problems necessary to the development of the medium itself. Little work was done with the educational and sociological problems which were to develop with the widespread introduction of television as a mass medium of communication in American life.

Two bibliographies appearing in the late 1940's, those of Rose (31) and Broderick (4), carry no reference to research in the educational, psychological or sociological problems related to television. There is no doubt that some investigations of the medium in terms of potential audiences, effects on other media, etc. were being carried on by advertising agencies, advertising departments of corporations, radio networks, and

This paper was originally prepared at the request of the California State Department of Education for inclusion in the *Brochure of Background Materials: Educational Television* for the Governor's Conference on Educational Television, held in Sacramento, California, December 15–16, 1952. It was necessary to develop the material in a very short time, and the writer wishes to express his indebtedness to F. Dean McClusky and May V. Seagoe of the University of California, Los Angeles, and to Lester F. Beck and Nicholas Rose, his colleagues at the University of Southern California, as well as to several of his graduate students for helping in locating copies of the studies reviewed.

possibly other affected industries. This type of investigation, however, is treated within the industry as a major trade secret and is generally not published.

As the mid-century mark neared, sociologists, educators, psychologists and others began to exhibit interest in the effects and offerings of television. By 1953 a substantial number of studies had appeared as evidenced, for example, by the reviews of Fearing and Rogge (11), and of Witty (50). This research literature appears to be growing in quality and amount each year.

An analysis of the existing literature of interest to educators shows that it can be divided into at least four major categories: (a) studies of the general effects of television as it functions in the lives of children and adults, (b) content analyses, (c) studies of the educational effects of television, and (d) studies of technical problems associated with the use of television in schools and similar situations. The following discussion will follow these four categories of television research.

Studies of the General Social Effects of Television

Parents, educators and students of the social sciences have been concerned with the effect television has on family life, school attendance, study habits, health, leisure-time activities and other facets of social living. There also has been some concern on the part of commercial research organizations with the social nature and habits of the television audience, as these facts are of great importance in the planning of advertising campaigns, etc. From the point of view of education, the studies embracing the general social effects of television may be broken down into at least three sub-divisions: (a) studies of the nature and composition of the TV audience, (b) studies of the effects of television on leisure-time and other social activities, and (c) studies of the effects of television on children and on education.

Studies of Nature of the Television Audience

Coffin (7) made one of the earliest studies of the television audience reported in the literature. While most of his attention was devoted to the effect of television on the other social activities of the family, the composition of his sample was indicative of the nature of the television audience in May 1948, on the eastern seaboard. At that time the majority of the set owners were in the upper middle class group with practically no owners in groups below the middle class level.

Riley and associates (28), reporting in 1949 on a continuing study conducted cooperatively by Rutgers University and the Columbia Broadcasting System in a special test city of 35,000 population, noted that the composition of the television audience was changing. By mid-1948 an in-

creasing trend of set purchasing among the lower economic groups was observed. In view of the fact that education is highly correlated with economic status, it was reported that a growing percentage of the audience consisted of those whose education had not exceeded elementary school.

McDonagh and associates (24), in 1950, after studying a representative California community, reported that television ownership was not related to age or educational status. The only differentiation noted was that larger families were more likely to own a set. It is interesting that these findings have been confirmed by a study in England. Silvey (37) found that more than half of the television sets in Britain were owned by members of the lower middle or working classes. He also observed that larger families in England were more likely to own a television receiver.

Maccoby (23) observed a tendency for set ownership to be concentrated in the middle income groups in Cambridge, Massachusetts, but the difference between middle and lower income groups was not very great. The professional group in Cambridge had the lowest percentage of set ownership and this was related to statements made by members of this group that they did not entirely approve of television.

The most thoro study on the nature of the groups owning television sets was reported by Swanson and Jones (43). The investigators developed a panel design using census block statistics. In addition to studying the economic and education levels of owners and non-owners, the investigators used a disguised intelligence test and a current affairs test. In reporting the results, Swanson and Jones say, "Neither years of education nor estimated intelligence level...revealed any owner vs. non-owner differences in means. The data do indicate, however, that television owners are significantly more *variable* than non-owners on the intelligence measure beyond the 2 percent confidence level. Television set owners thus represent a more heterogeneous group intellectually than non-owners" (43: 354).

The data presented by the studies reported above and, to some degree in studies considered in other categories, seem to justify the following conclusions:

1. While television, early in its introductory phases, represented a luxury to be afforded by groups that had the economic means to purchase sets, this situation no longer holds true.
2. As with the introduction of other mechanical devices into American life, an immediate tendency is set up to spread the advantages of television thruout all levels of society. Television is fast becoming a general necessity.
3. All groups of Americans can be reached in equal amount thru television broadcasts if set owning is the criterion of availability.

Studies of the Effect of Television on Leisure-Time and Other Social Activities

As noted in the preceding section, Coffin (7) was one of the pioneer investigators who inquired into the effect of television on social activities. He examined the patterns of leisure-time activities in 137 television and 137 non-television families matched as to socio-economic levels. The whole sample totaled about a thousand persons.

Coffin found a definite reduction in motion picture attendance on the part of the television families in his sample. Approximately 60 percent of the television families went to the movies less than they did previously. Even after the novelty factor was assumed to have disappeared (one year), low attendance still prevailed. A decline in attendance at all other forms of entertainment outside the home was also reported. Within the home, daytime radio listening declined 26 percent while night time listening declined 68 percent. Some dropping off in reading also was reported, altho this was not as great (18 percent) as with other forms of leisure-time activities. Finally, 24 hours a week represented the average use of television sets by the families in the sample. In general, Coffin also found these viewers to be enthusiastic about television, preferring even the television commercials to the radio commercials.

A decrease in most of the common leisure-time activities carried on by families was noted by Riley and associates (28) in their sample of 278 television homes as compared with 278 non-television homes. Families in television homes listened to the radio less, attended less motion pictures, read slightly less, etc. Only in sports attendance and sports participation did the two groups appear to be equal. The investigators noted no appreciable difference between families owning a set six months in these respects. However, the results reported by Lewis (21) as described in the next section would seem to show that the novelty factor takes longer to wear off than had been supposed.

Riley and associates also reported some other findings of interest. They found some differences in viewing behavior among various educational levels, with those persons who terminated their education in the elementary school viewing television somewhat less and listening to the radio somewhat more after six months of set ownership. Other differences were noted in motion picture attendance, but these were not great. Children were found, as in the studies reported in the next section, to be viewing television over two hours each night and listening to the radio much less. Fifty-eight percent of the owners who had sets less than six months reported that television had brought new interests to the family while 74 percent of the owners who had sets over six months reported the same.

In the Southern California community investigated by McDonagh and associates (24), the same pattern of decrease in leisure-time activities

among television owning families was observed. The authors reported that outside visiting, pleasure driving, reading, active sports, motion picture attendance and intra-family conversation suffered decreases ranging from slight to considerable. Home entertaining was increased.

Again, the effect of television seems to cross international boundaries. Silvey (37) reported less radio listening in Britain among set owners. This erosion of the radio audience occurred only during times of television transmission. (British television does not broadcast for the great length of time each day that American television is on the air.) He reported little slackening of "going out" among television families—a difference which may be due to cultural patterns. Silvey noted the novelty effect of television wearing off in England after one year—a fact not reported in American studies. As in the study by Riley and associates on American viewing patterns, English televiewers vary with education and socio-economic status as to the amount of viewing.

Swanson and Jones (43), in their carefully controlled study of the characteristics and habits of the Minneapolis television audience, reported a percentage loss on each of several other leisure-time activities when a television set was in the home. Motion picture attendance, radio listening, books read, newspaper reading time, and magazine reading all suffered. However, the investigators applied two statistical tests to the differences and reported that only radio listening and motion picture attendance were significantly lower. Finally, television set owners tended to know less about current governmental affairs.

A recent unpublished study by a psychological consulting firm in Los Angeles tends to throw doubt upon the conclusions advanced in several of the studies with respect to the long term effect of television upon motion picture attendance (17). A staff of trained psychologists interviewed a representative sample of movie-goers as they left Los Angeles theaters. Of this group, 37 percent owned television sets and 63 percent did not. The distribution of the rate of motion picture attendance (once a week, etc.) was approximately the same between the two groups. More important, the entire sample agreed, with a percentage ratio of approximately 80 percent to 20 percent, that they preferred to watch a feature motion picture in the theater.

The psychologists doing the research then set up a series of depth interviews to determine why people who own television sets attend theaters. It is fairly evident that the reason people enjoy films is that they can project themselves into the dramatic situation. Three conditions seem to give the theater an advantage over television in this respect: (a) size of screen with its more lifelike appearance, (b) the greater continuity of a

screen feature presentation uninterrupted by commercials and announcements which prevent empathy from occurring, and (c) the surroundings presented in a theater which offer no distractions in viewing as compared to a partially illuminated living room, voices of other people, etc. which are present in most home television situations. It may be that the leveling-off effect reported by Lewis in the study described below may have been operating in the case of those television viewers who are attending motion pictures regularly. Some form of choice and discrimination seems to be present.

The data in these and other studies reported in the next section seem to justify the following generalizations:

1. Television in the home definitely has an effect on all the other leisure-time activities carried on by the family.
2. Most investigators agree that radio listening, motion picture attendance, reading, and "going out" are decreased when a family owns a television set.
3. The evidence with respect to the so-called novelty effect is not clear. There is some reason to believe that the initial effect of television on leisure-time activities may be modified, but not erased, as the set remains in the home over a period of time. However, the duration of the novelty effect is longer than most investigators had suspected.

Studies of the Effect of Television on Children and Education

In the past two years several investigations have been reported which have inquired into the effect of television on the behavior and habits of children. These studies are of particular interest to parents and educators. McGinnis (25), in one of the earlier studies, reported on a survey of 2182 pupils in the elementary grades of the Perth Amboy, New Jersey, public schools. Children in the lower grades were quizzed as to their preferences among comics, books, motion pictures, radio and television. Children in the upper grades were questioned further and were asked to indicate time spent with each of the media. Of the 2182 pupils, 60 percent listed television as their favorite, with books (18 percent), motion pictures (12 percent), radio (6 percent) and comics (4 percent) following. The statements of viewing time for television were not considered too reliable, but the investigator estimated that the pupils watched television between 15 and 25 hours per week.

Witty (48, 49, 51, 53) has reported in several journals on two studies he conducted and on several related studies. The two studies conducted by Witty embraced both elementary and secondary pupils. He used a sam-

ple of 2100 elementary school students in April and May of 1950 and 200 high school students in December of the same year.

In Witty's sample of 2100 elementary school students, 43 percent had television sets in their homes and these children spent about three hours daily in viewing. Even children in non-television homes reported average viewing times of over one hour per day. Radio listening and motion picture attendance had dropped off substantially as in the previously reported studies.

Witty investigated the relationship of television viewing and school achievement. He reported that 67 percent of the children felt that television did not help them in their schoolwork while about 30 percent believed that it did. "The relationship between intelligence and amount of televiewing was ascertained by correlating the hours devoted weekly to television by pupils in grades 3 to 7 with their IQ's. The size of the coefficients was insignificant in every grade. There was also very little correlation between educational test results and amount of televiewing. Excessive televiewing, however, seemed to be associated with somewhat lower academic attainment" (51: 1).

In the same study, Witty obtained replies from 1700 parents, 55 percent reporting that they approved children's programs, while another 25 percent endorsed certain programs only. Parents who disapproved of television mentioned the sensational nature of many programs, the decrease in children's reading, etc. Teachers of the same children had a much higher rate of disapproval. Forty-eight percent of the teachers expressed dissatisfaction with television while another 25 percent recognized limitations but felt that the medium had potential value. Some values reported included the ability of television to expand experiences of children and to introduce new interests.

Witty cites several surveys of the same type applied at the secondary level. These include studies by Young (54), Gould (15), Lewis (46), Rutter (32), Carlson (5), and a survey made in the high school at Roselle, New Jersey (44). In general these studies show that students in the junior and senior high school spend from 14 to 27 hours per week at their television sets. There is some evidence that this figure tends to drop with length of set ownership and as the students grow older, but the lowest figure reported is 13.48 hours per week. (See also the study reported next for further information on this problem.) Some of these investigators also tried to relate television viewing habits to school achievement, but the evidence is conflicting on this point. This fact was noted by Cain (45).

Finally, Witty studied the television habits and opinions of students in an Illinois high school and obtained approximately the same results as reported in other studies. Sixty-four percent of his cross section sample (200 students evenly distributed in the four years of high school) reported

in 1950 that they had sets in their homes. Viewing time was about 15 hours per week with most viewing done between 7 and 10 p.m. Most of the viewing schedules of students were set up without help from parents or teachers. Thirty percent of the owners felt that television helped them in their schoolwork. Television had about the same effect on radio listening and movie attendance as reported in other studies. Thirty-four percent of the set owners reported that they read less than before owning the set.

Lewis (19, 20, 21) has written several reports on a continuing investigation of television and its effects on high-school students in the South Shore High-School Community in Chicago. These studies have been reported to the advertising industry by Bradway (2, 3). Lewis believes that a viewing cycle has been traced to completion.

Lewis cites evidence that, over a period of two years, semi-annual checks revealed a decline in the average number of hours per week spent in viewing as the number of set owners increased. His lowest reported figure is 16.25 hours per week. He also found that sets that had been in homes for four years showed a leveling off of viewing on the part of teenagers beginning with 17.24 hours per week the first year and ending with 13.48 hours the fourth year. This 13½ hour viewing rate was corroborated by other findings in the same system. Students felt that they could not view television more than 15 hours per week and keep a "good" scholastic rating. "A study completed in June 1951, dealt with the Primary Mental Abilities profiles (intelligence test) of student televiewers. One phase of this investigation compared the abilities areas with the weekly viewing averages... students with weekly viewing totals in the 11-15 hour group were also identified with the peak point in the rating profile. Where viewing totals increased beyond this level, students were found to be, on the average, less proficient in the areas of word fluency, verbal-meaning, reasoning, memory, and space" (21: 119).

Lewis also showed that there were sex and maturity factors involved in televiewing. An extensive survey of students ranging from nine years of age to 18 shows, first of all, that viewing decreases with maturity ranging from approximately 23.5 hours at age nine to 13.75 hours at age 18. For girls, this figure progressively drops off, while for boys there is an upsurge at about the eleventh year which Lewis accounts for by the boys' growing interest in spectator sports.

Lewis also reported (as did Witty) on favorite television programs of high-school students, noting some differences between boys and girls, particularly in the earlier years. As they become older, their choices become more alike. Finally, Lewis examined the effect television had on the practices of high-school students in doing homework and making other adjustments in the home. Sixty-nine percent reported that they did their

homework before viewing television. Various other patterns made up the balance including 2 percent who said they did homework *while watching television*. Some interesting technics, similar to those developed for doing homework with the radio on, were reported.

Clarke and his associates (6) conducted a study under the auspices of Xavier University attempting to determine the effect of television on the school achievement of children and whether or not parental control of viewing affects school achievement. This study also was reported by Dunham (8). Two samples were used—544 sixth grade students from the Cincinnati public schools and 454 seventh grade students from the parochial schools. Set owners in each case were matched with non-owners on the basis of intelligence. Achievement was determined by the scores on a battery of standardized achievement tests.

Clarke concluded that no measurable effect of television could be ascertained in the study. The non-owners and owners rated approximately the same on all measures of achievement with differences not being significant. Furthermore, there was no evidence that parental control of viewing had an effect on school achievement. Those children whose viewing was uncontrolled did just as well as those children whose viewing was controlled. The investigators cautioned, however, that "poorer television habits and lower IQ's and low parental control and low achievement tend to be found in the same child" (6: 7). (Statistical significance was not established.)

The Xavier study also shed some light on viewing practices. Children in the sample reported that they viewed television on the average of 3.7 hours per day during the school week and 5.5 on weekends. This makes the total viewing time about 30 hours per week. An amazingly high percentage—52.6 percent—of the children reported that their parents exerted no control on their viewing. Program favorites included variety shows, westerns, and crime.

May Seagoe reported two studies relating to children and television (33, 34, 35). In the first, a sample of 323 children from four school districts in Los Angeles County was studied to determine their television habits and preferences. A questionnaire was used with children in the upper grades, while the younger children were interviewed. Sixty-two percent reported owning television sets which they watched more than two hours per day. Miss Seagoe noticed that the time spent with all media increased with age—a fact somewhat at variance with Lewis' findings. Also reported were the usual declines in motion picture attendance, radio listening, etc., among those who had television sets. Preferred programs included adventure, comedy, westerns and family shows. Significantly, the children revealed that their favorite programs were not necessarily the

ones they viewed most often—indicating that the desires of other members of the family played their part in television program selection.

In the second study, the investigator developed a rating scale by which an adult might judge how good any television program or motion picture is for children. This scale was developed by observing children at theaters and at "television parties" and questioning them as to their likes, etc. No claims are made that the scale is a final instrument, but it is a beginning and gives several clues as to the types of presentations which children really prefer.

Evry and associates (10) in a brief report summarize the results of questioning teachers and parents as to the effect of television on such things as interest in sports, discipline problems, grades, etc. No information is given as to the research design or the nature of the sample. The percentages quoted reveal some differences in opinion between parents and teachers on the matters studied, but no tests of significance were applied.

Maccoby (23), in the study mentioned earlier, investigated, by the open-ended interview technic, the television habits of 622 school children in Cambridge as reported by their 332 mothers. She found no difference in viewing time at different age levels (again this is at variance with Lewis' findings), with the average weekday time being 2.4 hours and the Sunday time 3.5 hours. Maccoby could establish no novelty effect even when sets had been in the home two years.

Viewing seems to be done most in a family context both on weekdays and on Sundays. Whether or not friends come to view television with the children depends on the amount of set ownership in the neighborhood. As set ownership increases, viewing tends to become more of a solitary family affair. Within the family during viewing, little inter-personal communication occurs. The largest number (84 percent) of the sets are in the living room, interfering with other forms of family life. Some activities are carried on during television viewing, but these tend to be rather insignificant. About one-third of the families report a certain amount of tension over getting children to come to meals. This conflict is resolved in 16 percent of the cases by serving the children in front of the set. Bedtime was reported as presenting a serious problem in over one-third of the cases; children with television also go to bed later than children of the same age without television.

Television does not appear to have interfered with homework. It has, however, in the sample studied, substituted for radio, motion pictures and reading to a significant extent. While some of the television time comes from other media, much of it comes from playtime and creative activities. Maccoby then discusses the psychological implications of her finds.

The data presented in the studies reviewed in this section seem to justify the following generalizations:

1. Where television is available, children of all ages view it extensively, with the average running over 2 hours per day on school days and more than that on weekends. Averaging the results of all the studies, it would seem that children spend in the neighborhood of 20–25 hours per week watching television.
2. The preoccupation with television causes a decline in almost all other kinds of leisure-time activities. While it cuts down on the use of other media, it also cuts into participating activities such as playtime. The net result is that childrens' exposure to the mass media is increasing.
3. There as yet is no demonstrable effect of television on school achievement. The evidence in this regard is conflicting.
4. Television has had an effect on the family life of children. It has influenced their eating, sleeping and social habits generally in an undesirable direction from a psychological point of view.
5. If Lewis' data is confirmed by other investigators, there would be some reason to believe that a leveling-off factor will begin to operate after four years of set ownership and that television will be integrated more comfortably into family life. Further research is definitely needed here.

Studies of the Content of Television Programs

Several studies of the content of television programs have been made under the sponsorship of the National Association of Educational Broadcasters working with a grant from the Ford Foundation. Dr. Dallas Smythe directed the studies, two for the New York area and one for the Los Angeles area. The studies are reported in an article by Smythe (38), in a book by Smythe and Campbell (39), and in an article by Kingson (18).

The research design in each case was the same. A monitoring headquarters was set up in the test city. Receivers for each channel in the area were set up in the headquarters and monitored by a trained staff under constant supervision. Every minute of broadcast time was observed, categorized, and recorded. In that way, the entire television output of the stations serving these large metropolitan areas could be accurately described.

The first New York study set the pattern (38). The test week was January 4 to 10, 1951, when 33,837 minutes of broadcasting were presented. This broadcasting was broken down into the following categories: drama, 25 percent of total time, including 10 percent crime drama; variety,

14 percent; sports, 10 percent; homemaking, 10 percent; children's programs—all types, 12 percent. In addition advertising occupied 10 percent and 5 percent went to news. The other categories, which might have included programs considered educational were even less—for example, information, 3 percent.

The Los Angeles study covered the week of May 23 to May 29, 1951. The investigators reported that:

> Approximately one-fourth (26 percent) of the total television program time during the test week was devoted to general adult drama programs. This was largely motion pictures. Domestic programs...for housewives and similar presentations took...16 percent.
>
> News reports contributed 12 percent of the total, a proportion considerably inflated by the unusual circumstance of a "special events" telecast over two of the Los Angeles stations in connection with a kidnapping...which amounted to 8 percent of the total time on the air. Children's programs of all kinds took 10 percent of the total time, variety programs...took an equal amount and music... took six percent. Eighty percent of the total television time during the week of monitoring was taken up with these types of programs.
>
> If one considers program types without respect to their intended audiences, combining all drama programs (adult and children's), all variety (general, housewives', and children's), and all popular music (general and housewives'), these three categories account for 60 percent of all the program time. If the time of quiz, stunt and contest programs, personality shows, and sports programs is added to this, nearly three-quarters (73 percent) of the total time is accounted for (39: 1).

Other highlights of the report included the facts that informational, religious and discussion programs played a minor role during the test week; that westerns led the list of drama programs (10 percent) with crime close behind at 9 percent; that drama, popular music and variety dominated the evening hours; that 55 percent of the children's time was devoted to drama, one-half of which was western drama, and that one minute in six of Los Angeles television was devoted to advertising.

Kingson (18) reported on the second New York monitoring study conducted by Dr. Smythe during the week of January 4 to January 10, 1952. Kingson writes that:

> ...there have been few major changes in New York television during the year between the two surveys. There is more television—11.3 percent more—with the seven stations offering a little over 63 hours of additional program time. There is also more drama...all drama programs (including children's) in 1951 were 33.2 percent of programs while in 1952 they were 42.4 percent.
>
> Children's programs show a decrease from 12.5 percent to 11 percent, tho children's western drama programs increased from 2.5 to 4.1 percent. Variety programs went down from 13.6 percent in 1951 to 6.2 percent in 1952; information programs from 3.3 to 2.9; sports from 10.1 to 8.4 (18: 318).

While the NAEB studies examined the overall content of television broadcasting in New York and Los Angeles, a more intensive study by Orme (26, 27) analyzed the crime content of television programs broadcast in the Los Angeles area May 1 to 7, 1951 and May 24 to 30, 1952. Every station in the area was monitored with special attention being given to programs designed for (or easily accessible to) children. The monitors had instructions to list and describe every crime portrayed during the week.

In the 1951 study (26), almost 1000 crimes were perpetrated on the television screens during the test week, with 82 percent of them occuring on children's programs. Seventy percent of all programming devised for children was based on crime. During the test week, 60 hours and 15 minutes of children's program time was devoted to crime. A tabulation of the types of crime shown ranges from arson through mayhem, kidnapping, and murder. Orme lists typical specific incidents and points out that while the trappings of the production (western, outer space, etc.) vary, the action is mainly criminal.

The 1952 study (27) indicated some improvement, particularly in the output of two stations. However, the overall picture was approximately the same. There were 853 major crimes shown on television during the week. The total volume of crime programming and the specific number of murders was greater, however, than in 1951. The monitors noted fewer incidents of outright horror and brutality. Orme also reported that the commercial rating of many of the children's programs had dropped substantially during the year as the sets in use figure had fallen off from 32.2 to 22.3 for the hours from 5 to 7 PM.

These monitoring studies went into much more detail than can be reported in this brief summary. However, certain generalizations can be suggested:

1. The amount of time devoted to programs which, even broadly interpreted, are educational in nature is very little when compared to the total programming in a saturated television area.
2. The bulk of programs which are available are in classifications which, while they may be entertaining, are not useful to the general public in helping them solve the tremendous problems which confront the nation nor do these program classifications illustrate many possibilities of expanding and enriching the cultural experience of the viewers.
3. The entertainment programs designed for children contain a tremendous amount of crime and violence to the exclusion of other possible dramatic, exciting, or comic material which might have a more wholesome effect.

Studies of the Effectiveness of Television Used as a Means of Instruction

Television, as the motion picture, provided a ready-made research possibility for investigators to use to determine the effectiveness of communications. Consequently, even tho television is still very young, several carefully controlled studies have been made on the effectiveness of television as a teaching instrument. Several of these studies have been sponsored by grants of money from the U. S. Department of Defense.

Rock and his associates (30) attempted to determine whether television could be used to teach Army reservists, the extent to which men remember what they learn by television, the best methods for teaching by television, and how the trainees liked television instruction. Eight one-hour television lessons were broadcast to 160 groups of reservists in 10 major cities. The groups were tested before and after the telecasts. The sample included more than 3000 reservists.

Results reported by Rock reveal that: (a) all grades of officers and men made higher scores after viewing television, (b) mixed groups (different levels of intelligence and experience) can benefit from a single level of television instruction as all groups made significant gains, (c) tests of retention showed that both officers and enlisted men retained a substantial amount of the material over a period of three to six weeks, (d) analysis of the program kinescopes showed that topics treated explicitly resulted in large knowledge gains while topics treated sketchily failed, (e) the most effective teaching procedure included narration, and (f) four-fifths of the reservists rated television instruction "interesting" or "very interesting," a majority thought it better than the average training film, and approximately 75 percent said they would rather be taught by television than other classroom methods.

Rock and his associates (29) made another study to determine the comparative effectiveness of television, kinescopes projected as motion pictures, and conventional classroom instruction, to investigate the factors that result in good educational television programs, and to determine the acceptability of television instruction to Naval Air Reservists.

Three groups of from 100 to 120 men from the Naval Air Reserve were set up. The groups were instructed by television, kinescopes, and conventional methods in two series of eight lessons, one a refresher course for officer pilots and the other a basic training course. Pre-tests and post-tests were used to measure learning.

The results reported include: (a) both television and television recordings (kinescopes) were superior to local instructors (in about 77 percent of the comparisons), (b) television and television recordings were about equivalent in their effectiveness (in 84 percent of the comparisons

kinescopes were as effective), (c) direct narration and film animation were effective technics, while combined drama and narration was not as effective as direct narration, (d) trainees reported that they liked television instruction very much.

Wilson and Moe (47) of the U. S. Department of Agriculture made a study of the effectiveness of a series of 11 television programs, each of which demonstrated specific dressmaking operations. Prior to the telecasts, announcements were made concerning the program and a bulletin on dressmaking was offered free to women who telephoned for it (the study took place in Washington, D. C.). The study is based upon interviews with 251 women selected at random from the 974 who had requested the bulletin.

The interview questionnaires were extensive (57 questions), had been pre-tested, and were administered by trained interviewers. The interviewing took place three to four weeks after the programs had been completed. The audience was primarily made up of young homemakers with young children who had attained a high educational level and who had access to a sewing machine.

The study, then, was a study of a highly selected audience who had evidenced enough interest to obtain a copy of the bulletin. A high percentage of these women viewed the programs. Nine out of 10 viewed at least one, and the average for the entire series of 11 was almost 44 percent of the total audience. Seven out of 10 women missed programs because of family responsibilities. Nine out of 10 of the women reported that they had learned new things with those seeing more programs being more likely to learn. About one-half of the women used the practices demonstrated, putting at least one practice into use. The supplementary bulletin greatly increased the effectiveness of the programs, with seven out of 10 reporting that they got more help from the television demonstrations by having the bulletin. Most of the women favored longer programs as being more helpful (the programs were only 12 minutes in length). Finally, almost all the women (97.8 percent) wanted more television programs on sewing.

Stanley (40) has written a descriptive report of an experiment in the San Diego City Schools in using KFMB-TV in San Diego for a series of educational telecasts. Eighteen programs designed primarily for use in schools were broadcast in six weeks from April 29 to June 7, 1952. The majority of the report is taken up with an account of the development and production of the programs and is of great interest to individuals and groups thinking of similar activities. In addition, an evaluation of the programs was attempted by the Research Department of the San Diego Schools.

A brief checklist was developed which teachers were asked to fill out in connection with each program. This checklist had a four-point rating scale and provision for subjective reactions as well. No great claims are made in the report for the validity of the results, but they do give an indication of teachers' observations of the effectiveness of a series of planned telecasts designed for in-school use. Teachers ranked the programs as having great value in interpreting the schools to the general public.

The evaluations revealed a need for great coordination with the curriculum, as elementary teachers ranked elementary programs high, but secondary programs low, and the reverse was true of secondary teachers. All teachers tended to rate a majority of programs above the median level. Demonstration lessons, particularly in science, were rated as having the greatest interest for students. Most teachers thought that study guides would have made the programs more effective.

Goldberg (14), in one of the Hofstra College studies, reported a brief investigation attempting to determine whether listening to or viewing a simulcast (combined radio broadcast and telecast) resulted in greater liking and retention on the part of listeners or viewers. He used 46 subjects, 22 of which watched the telecast of Arthur Godfrey's Talent Scouts and 24 of which listened to the radio broadcast of the same program. The subjects checked a rating sheet every five minutes and then at the end of the program. A week later 12 viewers and 18 listeners were given a short content test.

The television group scored higher on every rating point on the "liking" scale than did the radio group including the whole show rating and the median rating. However, the form of the two profiles was very similar—that is the radio group liked the same parts of the show as the television group, but not as intensively. On the memory test, the two groups showed similar trends: the television group remembered at a higher level than the radio group. One interesting note was that 100 percent of the television group could name the sponsor correctly while only 72 percent of the radio group could do the same. However, the sample was very small and no tests of significance were applied.

The following generalizations seem justified by the data reported in these studies:

1. Television is an effective medium of instruction.
2. Instruction by television is remembered by those who experience it.
3. All studies report that learners like to receive instruction by television.

4. Altho more study is needed to establish specific technics that are most effective for television instruction, it seems to be established that direct instruction, supplemented by printed bulletins, is one effective way to use television. Dramatic and other complicated technics would seem to need further investigation.
5. Television as used for in-school broadcasting is also an excellent public relations medium.

Studies of the Technical Aspects of Television Utilization

If and when television is used for educational purposes, whether in schools or outside of schools, certain technical problems will need to be solved. For example, what size screen is most effective for a given size or group? Will extended viewing hurt the eyes? How should sets be placed for group viewing? These and other questions will have to be answered. At the present time, a small amount of research is available which throws some light on a few of these technical questions.

Lewis (22) in May of 1950 reported a series of small studies on the technical problems of utilization. He investigated (a) seating arrangements for viewing, (b) optimum size of screen, (c) location of receiver, and (d) effect of ambient illumination. A special room was set up in which chairs could be arranged in various patterns, receivers set up at various heights (a series of 5-inch steps was used), a measured track along which subjects could walk and report maximum and minimum viewing distances was placed on the floor, and a series of angles were marked on the floor for set placement. Lewis used screen sizes available at that time (10-inch, 12-inch, and 16-inch direct view and the 15 × 20-inch projection model). Since that time, of course, sets with much larger direct view screens are available—screens as large as 24 inches are now being shown in the stores.

Lewis used 600 students in all his experiments and reported the following results: (a) the center of the television screen should be between four and one-half and six feet above the floor in the average classroom (it is to be noted that Lewis calculated a classroom 23 feet wide without the side aisles and a maximum of 45 feet long; this type of classroom has largely been superseded in many places with the square type, approximately 30 feet by 30 feet), (b) staggered rows of chairs should be used, and (c) some incidental illumination should be present in the room at the time of viewing.

In his study of screen size, Lewis reported that a 10-inch screen could be viewed by a median number of 15 students, the 12-inch by 24 students, the 16-inch by 30 students and the 15 × 20-inch projection screen by 48 students. His maximum figures for each screen were much higher.

This report by Lewis is definitely at variance with the recommended standards of the Department of Audio-Visual Instruction of the National Education Association, for the size of classroom screens for projected materials. The difference is even greater when it is remembered that the size of a television screen is calculated by the length of the diagonal.

Two rigorous studies relating to television viewing conditions were conducted at the Los Angeles College of Optometry. The details of these studies, particularly the optometric data and mathematical procedures used are beyond the scope of a general review such as this. Interested persons should refer to the original studies. However, the general findings are pertinent to the problem of this paper.

Stein, Hofstetter, and Graham (42) investigated the effect of placing light-absorbing filters in front of a television screen (in the presence and absence of ambient light) on the discernibility of the television image. They also made additional tests with an ophthalmic filter placed before the viewers' eyes. The hypothesis investigated was that a light-absorbing filter placed in front of the screen would reduce the amount of ambient light on its way to the screen as compared with a single reduction of the transmitted light from the screen. This, it was theorized, would result in greater discernibility. The results verified that phase of the investigation: with ambient light present, a light-absorbing filter placed in front of the screen showed higher relative discernibility. These results did not obtain with the opthalmic filter.

Stein and Hofstetter (41) also studied the effect of prolonged television viewing on the eyes. Five subjects viewed television continuously for 12 hours. They were tested with various optometric measures, clinically observed, and rendered subjective reports as to how they felt, etc. The investigators reported that no significant changes occurred in the clinical optometric findings. The subjects varied as to how the prolonged viewing affected them. Two subjects had no complaints. Two reported headaches as time went on, but a later diagnosis revealed that one of the headaches was probably due to another cause. No headaches were reported the following day. Some ocular discomfort was reported by three of the five subjects, but this discomfort had no effect on the optometric findings.

The technical research reported in this section is so sketchy that it probably does not justify generalization. Apparently statements that television "hurts the eyes" are open to serious question. Much more research needs to be done in the area of optimum screen size, etc. It would seem that light-absorbing filters would be useful on classroom television rereceivers, particularly in those classrooms where it is difficult to control light.

Summary

The existing research on television of interest to educators was analyzed and found to be grouped into four general categories: (a) studies of the general social effects of television, (b) content analyses, (c) studies of the educational effects of television, and (d) technical studies. Studies in each of these four categories were reviewed and generalizations drawn from them. No attempt was made to review related research that is, no doubt, applicable to the problems of television. For example, the vast amount of research information developed in the audio-visual field during the past 30 years was not touched. Future investigators will find that the existing television research and the existing audio-visual research provide only a sketch map of the field of audio-visual communication. To use these important instruments wisely, and this is particularly true of television, it is necessary that we know and understand much more. This is the challenge for future research.

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WORLD COMMUNICATIONS

• ANDRIES DEINUM

FOREIGN PERIODICALS

It's doubtful whether there is another field of communication where periodicals have come and gone with the frequency with which they have bobbed up and down in the field of film. It's fortunate that most of these periodicals had little intrinsic merit, for they will not be missed much, except possibly by their fond editors. There were several film magazines, however, of the utmost importance. Any library having among its holdings files of *Close Up, Experimental Cinema, Cinema Quarterly, Film Art, Films*, or *World Film News*—to mention some of the principal pre-war periodicals in English which ceased publication for lack of support—can consider itself blessed indeed. Enumeration of the many late, lamented periodicals in languages other than English, would only serve to emphasize the obvious point that in the past neglect of a serious approach to film was general and wide.

The unhappy record indicated above has not kept sincere and enthusiastic students of film from trying to start new, worthwhile magazines. These post-war attempts, by themselves, are most gratifying, altho, of course, as hazardous as in the past. A brief consideration will make this all too clear.

The Penguin Film Review, with the tremendous resources of the largest low-price English book publishers behind it and ably edited by a fine film scholar, Roger Manvell, barely managed to last for nine issues from 1946-1949. Its policy was continued by the annual *Cinema* (also Penguin), of which three issues (1950, 1951 and 1952) have appeared so far. Mr. Manvell recently announced that the 1952 issue had been the last one. In 1946 several young, dedicated filmmakers in Hollywood made another good try. Their magazine, *Cinema*, lasted four issues and folded. In 1947 members of the Oxford University Film Society began to publish

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an excitingly fresh and intelligently non-conformist periodical called *Sequence*. This one lasted 14 issues and then joined its little brothers, proving once again that only the good die young. The Viennese *Filmkunst* after a few brilliant issues gradually petered out. It apparently died last year without a fuss. But not every periodical goes quietly: in France the lively *Raccords*, started in 1950, was forced to suspend publication in 1952. Its editor, Gilles Jacob, addressed his former readers from the pages of another, luckier magazine in warning and apprehensive tones on the theme of the well-known story about the ten little Indians... "and then there were none."

The same sad tale can be told about practically any country in Europe or Latin America. We keep a special place in our Farmington collection for several folders full of first issues of magazines that died stillborn. No doubt many deserved this fate, but you can take my word for it, that several looked promising, to say the least. It would serve little purpose to call your attention to these one-shot affairs: they represent dead issues in more than one sense. So before this column turns into a dirge for all the brave, little magazines cut down in their prime, let's go on to more pleasant aspects of the subject.

Not all new magazines died at birth or during childhood. There has been a renaissance of serious writing about film all over Europe and several excellent, growing periodicals reflect this welcome development. In this column I want to call your attention to some of these. Most of them began publication during the past few years; they are still going strong and back issues are still available for those wanting a complete file. In dealing with them, I intend to stress their background and their content; I do not intend to pass judgment on them. The cursory nature of my examination and the scope of this column do not allow for serious criticism. It is in order to state, however, that by and large, the periodicals I will mention represent the best efforts of which their many notable contributors are capable. This, of course, implies no slight for such "settled" periodicals as the Italian *Bianco e Nero*, the Swedish *Biografbladet*, the Scottish *Film Forum*, the French *L'Ecran Français*, the (Hollywood) *Quarterly of Film, Radio and Television*, or the (New York) *Films in Review*, all of which have well established themselves within their respective areas of interest.

Sight and Sound. Published by the British Film Institute at 164 Shaftesbury Avenue, London, W.C. 2, England. Annual subscription in USA (4 issues), $3.00. Editors: Gavin Lambert, Penelope Houston.

It may appear to make little sense to start a survey of the latest foreign film periodicals with a discussion of what is in all likelihood the oldest existing,

serious film magazine in the world: *Sight and Sound* has a continuous record of publication from 1932. It could—and rightly—be claimed that after all *Sight and Sound* is, in effect, a new publication since it so recently got its new editors from the now-defunct *Sequence*—editors who proceeded to pour needed new blood into a publication that had begun to tend toward the pontifical. Even if this excuse had not been at hand to get *Sight and Sound* into the present column, it would have been necessary to mention it. It seems altogether inevitable and pertinent to call attention here to this finest of film periodicals, which happens to be—and fortunately for most of us—in English, but which expresses frequently a point of view refreshingly non-American, thereby giving our thinking a needed perspective.

Sight and Sound was originally published for the members of the British Film Institute, an organization, by the way, that might well be copied in this country. It has since become the most consistently useful and stimulating publication dealing with film in all its aspects. Back files of *Sight and Sound* constitute one of the most valuable sources of research material on the film.

While it is true that the magazine does not deal specifically with what are known as audio-visual problems, and is not addressed to or written for educators, it is undoubtedly of vital importance to them. It will, better than any other single periodical, keep them up to date on developments in film all over the world; it will tend to make them see relationships in their field that might escape them otherwise, and in general it will surely broaden their knowledge of and their love for film.

In most places where films are made, qualified and literate correspondents supply abundant information in each issue about the latest progress in all fields of film-making. Excellent reviews of books and films are carried. A new feature has lately been added: reprints of pieces about film written by eminent writers (such as G. B. Shaw), not usually associated with film. Leafing thru some recent issues one encounters such articles as a personal note by Jean Renoir on his methods of work, a piece by Janet Hill on children's films, an elaborate discussion on the problems involved in filming Shakespeare, an article by Pudovkin on "Stanislavsky's System in the Cinema," and an article of special interest to educators, Karel Reisz' "Hollywood's Anti-Red Boomerang."

This enumeration barely indicates the range of *Sight and Sound*, which is truly comprehensive. The very feel of the magazine is a factor to recommend it: expensive coated paper allowing profuse and often rare illustrations, combined with excellent make-up and printing. There remains one final thing: the tone of its writing. This can best be exemplified by a typical excerpt from a noteworthy editorial by John Grierson on the implications of the British Government's decision to abolish its remarkable Crown Film Unit last year. Grierson winds up by suggesting the establishing of a new government film unit as follows:

"Let us create an organization... with an intelligent leader who cares more for poetry than about having a job.... Give him a secretary and an accountant with a secretary, and let the four of them shoo every phoney 'administrative expert' out of sight.... Let them proceed with the lightest possible pack on their backs to secure the making of at least half a dozen documentary films a year in the best tradition...."

Cahiers du Cinema (Revue Mensuelle du Cinema et du Telecinema) Published at 146 Champs-Elysees, Paris (8°), France. Annual subscrip-

tion in USA (12 issues), 3600 frs. (Approx. $10.50). Editors: Lo Duca, Jacques Doniol-Valcroze, André Bazin.

The first issue of this periodical appeared in April 1951. Its editors, all well-known film critics, intend it to follow in the traditions of the former *Revue du Cinema*, the magazine that had such a profound influence on film-criticism in France in its two incamations under the brilliant Jean George Auriol. (*Revue du Cinema*, first series: 1929–1931, 29 issues; second series: 1946–1949, 19 issues.) Auriol, now dead, could well be proud of the *Cahiers* which are dedicated to his memory.

Cahiers du Cinema resembles *Sight and Sound* in many ways: its approach and intent are quite similar; if it is different, it is in the direction of what has come to be called a high seriousness. *Cahiers'* articles would better be described as essays; they are primarily concerned with film aesthetics, film history and the impact of film on audiences. It is far from being a dull publication, however. The emphasis of the content is on the fictional film, not the fact film, and on the "experimental" film, rather than the strictly educational film. In this country *Cahiers* would be called "high-brow," not necessarily a derogatory term.

Sometimes practically an entire issue is devoted to the work of one man: Jean Renoir, Luis Bunuel, or again the editors may undertake an elaborate inquiry, such as the one on the function, influence and quality of film criticism, in which all the chief French critics participated. Several articles deal with the relation of literature to film, among them a most interesting one on Joseph Conrad and the film. The work of the *Institut de Filmologie* under its director Gilbert Cohen-Séat comes under discussion, and a late issue contains articles devoted to an event of great interest: the sixth International Congress of the Scientific Film held in Paris in the fall of 1952. The relationship of film to television gets frequent treatment.

Filmforum (Unabhängige Zeitschrift für den guten Film) Published by Verlag Lechte, Emsdetten (Westfalen), Germany. Annual subscription (12 issues), 4.80 D. M. (Approx. $1.25) Editor: Dr. Theo Furstenau, Finkenstrasze 25, Münster.

The newest, and from all evidence the best, film publication in Western Germany. The first number appeared in October 1951. It counts among its contributors such internationally known authorities as Joseph Gregor, Ludwig Gesek, Curt Oertel, Walter Hagemann and Walter Freisburger.

The periodical, simply produced and having an unassuming format, seems to be addressed to a wide, miscellaneous public. The articles are down-to-earth but thoro, frequently covering seemingly familiar, elementary subjects. One of the reasons for the existence of *Filmforum* is undoubtedly a desire to bring its readers up-to-date on developments in countries from which Germany was isolated for so long.

By no means are all articles devoted to basic film appreciation and recent film history. Even tho the magazine has no strict audio-visual slant, much in it ought to be of interest to educators. There is serious concern with the study of the effects of film, the use of children's films, the problems involved in making cultural films, and the future of film clubs in Germany, to name some subjects.

Other representative recent articles included a piece by Rossellini on the theme that the film studio is the greatest enemy of film, one by André Malraux on film and myth, a contribution by Ludwig Gesek on the Vienna Film Museum, and an intriguingly titled item: "What did Goethe do for the color film?" Film reviews are regular features and so is film news from several European capitals.

Cinedidattica (Mensile di Cinematografia Didattica, Scientifica, Educativa) Published at Via Boscovich 44, Milano, Italy. Annual subscription (12 issues), L. 4000 (Approx. $6.50) Editors: Prof. Attilio Inturrisi, Prof. Filomeno Madera, Dr. Ezio Croci.

A new Italian periodical, started in 1950, and devoted mainly to audio-visual problems with emphasis on the educational and scientific film. Its tendencies seem to be somewhat didactic and conservative, but the approach is invariably serious and informative.

Addressed, as it is, to teachers and educators generally, this magazine is more practical than the others mentioned so far. It carries many technical columns on projectors, film care, etc. It reprints and discusses filmstrips; it provides instructions on how to make certain types of films, such as surgical films, and it gives much pertinent information on film utilization.

Special attention is paid to the coverage of professional conventions in the audio-visual field such as the National Congress of the Educational Film, to which almost an entire issue was given, or the International Festival of Children's Films held at Venice every year since 1949.

While most of the contributors are university professors, recent long articles carry the by-lines of Vittorio de Sica, the director of *Bicycle Thieves*, Dr. Antonio Petrucci, head of the Venice Film Festival, and Dr. G. M. L. Peters, who is in charge of the Netherlands organization called "Film and Youth." Teaching films are discussed regularly, as are the experiences teachers have while using films in the classroom.

Rassegna del Film (Mensile di Cultura Cinematografica) Published at Via Po 9, Torino, Italy. Annual subscription (12 issues), L. 3000 (Approx. $5.00). Editor: Fernaldo Di Giammatteo.

Another serious, well-printed Italian film periodical; it began appearing in February 1952. It has a strongly aesthetic, critical bent. One of its chief features is a superabundance of detailed and perceptive film reviews. (The first seven issues boasted a total of 204 reviews of films of all kinds.) The goals of the magazine appear to be mainly the raising of the standards of film criticism and the encouragement of film clubs. The European film festivals—Venice, Locarno, Cannes—are given much attention. Several recent issues have contained a continuing symposium on film and the freedom of culture by many of Italy's important artists, professors and writers. Of more immediate interest to educators are articles like Guido Aristarco's on the principles underlying the use of films in schools, which elicited much controversy, or several discussions about film and television. Frequently filmographies of the works of important directors are featured.

BOOK REVIEWS

WITTICH, WALTER ARNO and SCHULLER, CHARLES FRANCIS *Audio-Visual Materials: Their Nature and Use.* New York: Harper & Brothers, 1953. Pp. 564. (Price $6)

Several books have been written to serve as textbooks in basic audio-visual classes for teachers and as reference for teachers already in service. This book likewise meets these two needs and has some characteristics which are different from the others. The authors have incorporated some unique features designed to meet their special purposes in writing the book. They state them as follows: "One important means by which instruction can be improved is to be found within the area of audio-visual materials and techniques and their relationship to the more effective accomplishment of the modern school curriculum. It is to this end that this book has been written" (p. 13).

Seventeen chapters cover:

1. The importance of audio-visual materials in our current civilization.
2. Learning theory and the importance of audio-visual materials.
3. All basic types of audio-visual materials.
4. Case examples of the integrated use of several types of audio-visual materials in one teaching situation.
5. Local administration of the use of audio-visual materials.

Chapter I and Chapter II, dealing with the role of audio-visual materials and learning theory, constitute one part of the book. Chapter I summarizes briefly the effects of our industrial economy and the changes in transportation and communication upon the school curricula. They contrast educational practices and media of communication 50 years ago and during the present day. The importance of the shift of population from rural areas to urban areas is applied but not specifically mentioned. The increase in knowledge which must be transmitted is emphasized.

Chapter II discusses very briefly the psychology of perception as a foundation for learning, as a basis for thinking, as a basis for attitude formation and the interrelated process in learning. The chapter is brief and concise but probably gives as much attention to this particular field as is needed in this type of a book.

Chapters III to XV cover, in order, the chalkboard, flat pictures, graphics, the tackboard and study display, globes and wall maps, three-dimensional teaching materials, community study, classroom use of radio, educational recordings, classroom recorders, still projection, the 16 mm sound motion-picture film, and television in education. Each of these chapters follows this general pattern rather closely:

1. A background introduction and/or a story emphasizing the importance of the specific type of material in a teaching situation. Many of these incidents are well selected and would serve as good motivating material.
2. The type of material is defined.
3. The typical characteristics of the material are described.
4. Suggestions are given on methods by which teachers can make the material if it is a type of material which is easily made. (For example, the process of making 16 mm motion-pictures is not discussed in detail.)
5. Criteria are listed for the selection of materials and the equipment necessary to use the materials.
6. Very specific suggestions are made for the actual use of the materials.
7. Most chapters include a summary but this is not always true. For example, the chapter on recordings includes no summary.
8. At the end of each chapter there is a list of activities for students taking an audio-visual class. These activities are carefully selected and, if properly used, would help a great deal in the teaching of a basic audio-visual course.
9. The bibliographies are ordinarily quite brief and name only those items used in the chapter. A few chapters have an extensive bibliography. Several chapters include lists of audio-visual materials pertinent to the topic covered.

The entire book is especially good in several ways. First, the pictures (the book is profusely illustrated) are an integral part of the material in each of the chapters. The text is written in such a way that the reader must constantly use the pictures as a part of his learning experience. A few of the graphic illustrations are hard to understand without the description in the text. A second very outstanding feature of the book is the attention devoted to actual teaching situations. Dozens of examples of teacher use of materials make the book a very readable and practical

one from the point of view of the teacher. This is probably the outstanding contribution of the entire volume. A third contribution is the attention given to use of materials promoting understanding between people, in our own country and in other countries. The examples constantly emphasize the value of the use of audio-visual materials to meet these ends. A fourth contribution is the emphasis on simple, readily available materials which all teachers should use. Every chapter dealing with the specific teaching materials contains many practical ideas for producing or using common materials.

A few specific chapters have unique approaches. An entire chapter is devoted to the study of maps and globes in place of including them as part of graphic or three-dimensional materials. This stresses the importance of a world with people living very close together in terms of time. The chapter on Community Study is a broader approach to the use of this type of learning experience than "educational trips." It has a beautiful introduction for the college teacher of the audio-visual class to use with the British film "Near Home." Several pictures from the film are not completely described in the text and can be used very nicely in connection with the film. The bibliography at the end of the chapter on Community Study does not include a filmstrip entitled "Field Trip," which may be of some value. Opaque materials are discussed in connection with other known projected pictures as well as with projected stills. The motion-picture chapter has a clever illustration showing how a film composed of still pictures represents movement. The section on free or sponsored films would be improved with a list of criteria to help teachers select sponsored films. The research quoted in the motion-picture chapter is still the old classic studies in most cases. There is no use, or interpretation for school use, of current Navy and Air Force film projects or the Nebraska project reviewed in the last issue.

The chapter on television summarizes excellently the current status of this developing medium. The authors discuss future possibilities but make no reference to the future use of "Video tape." This development probably was not published at the time the final copy of the book was approved. The chapter stressed the development of pupil standards of viewing and, by implication, the development of "viewing taste." One research finding which was not mentioned is the drop in viewing time by children, as they become older and as the set is in the home a longer period of time.

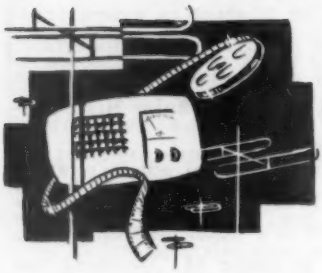
Chapter XVI deals with the integrated use of all types of audio-visual materials. In this chapter the authors present a chart (p. 455) of the various types of audio-visual materials with an analysis of (a) their visual and audio-visual characteristics, and (b) their possibilities of use for different purposes. To a certain extent this chart replaces the teach-

ing devices used by Dale (The Cone of Experience) and Olson (The Truncated Cone of Learning Experiences). The chapter is a new textbook approach to instructing teachers in the use of audio-visual materials. It includes examples of use of many types of audio-visual materials in specific units or subjects in second grade, sixth grade, Junior High citizenship, and language classes at various levels.

The last chapter in the book deals with local school administration and should be quite helpful in this area. Teachers could show this chapter to the local administrator with some hope of it's being useful to him. The authors use the term "teacher-director" in place of "building coordinator" to refer to the teacher in charge of the audio-visual program in each school. The important point is that they have attempted to stress the importance of this person in the administration of the audio-visual materials program within the individual school.

The book presents a few problems for some audio-visual instructors. Courses which include a little photographic laboratory work will have to find other supplementary text materials. If an audio-visual laboratory is an integral part of a course, the latter part of the book (certain chapters) will have to be used early in the course. If selection of materials is a separate topic, sections of many chapters will have to be used. Except for photographic materials, however, the instructor can re-arrange readings to coincide with laboratory projects.

The book is a definite contribution to the literature in the audio-visual field. It presents a fresh approach to several perplexing problems in the instruction of teachers in the use of audio-visual materials. The authors have obviously considered the problems carefully and addressed themselves to their correction. The careful use of the illustrations and the inclusion of countless well chosen examples from real teaching situations bear witness to the careful thoro analysis and writing of the authors. Every audio-visual supervisor and instructor should read it carefully, for personal benefit and possible use with teachers.—FRED HARCLEROAD



FILM REVIEWS

• W. A. WITTICH, Editor

RETIRE TO LIFE. (International Film Bureau, 57 E. Jackson Blvd., Chicago 4, Illinois.) 20 minutes, 16 mm sound, black and white. $75.00. Produced by the University of Oklahoma for the Oklahoma State Board of Health, Mental Hygiene Division. Psychiatric Consultant, A. A. Helems, M.D.

RETIRE TO LIFE moves toward a constructive life attitude for those facing the problems of old age and retirement. It sees this increasingly important problem from the point of view of an old man who retires from the security and status of his job. The film tells the story of his discovery that he is not prepared for retirement. It follows him thru the unpleasant trial and error search for a solution. With a friend's advice and help, he becomes able to see himself as others see him; and find suitable employment where he can combine business with pleasure. He has felt that he was an unwelcome member of his son's household. With the new job, he and his wife establish their own home in another community where they build a life of activity and recreation with new friends.

The University of Oklahoma production staff did a good job of casting and direction. The old man is pleasant, his range of response seems to give him three dimensional qualities as a person. His story is well visualized and moves along at a rhythmically varying pace which strengthens its changes of mood and meaning. Editing technics strongly build up the impact of hospital bills and the succession of bewildering rejection incidents that drop the old man into despair. The sound track is strong, easily paced, and it is not overloaded with words. Being narrated by the old man, it clearly establishes the point of view as being his. The subjective narration will help an audience of older people identify themselves with the film. There is an avoidance of the authoritative tone in the narration which helps put the main ideas across easily without the feeling that the audience is being lectured.

However, the film has a chronic technical difficulty which tends to dampen the effectiveness of its other aspects. The print I saw was excessively contrasty and the lighting was sometimes flat. The result gives a bitter quality to many scenes which should be light and airy in their feeling. The quality tends to remain similar regardless of the fluctuations in meaning as the story evolves. When the director's intention is fulfilled with lighting that articulates form and

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space, the sense of realism and clarity is heightened. The film should have a strong feeling of psychological reality about it so that it will seem valid to people who are personally involved in this kind of problem.

The series of incidents where the old man is rejected are overdrawn. The consistency with which he is rejected is not motivated in the film. The rapidity with which that whole aspect of his life changes comes too easily to be convincing. There seem to be no resistances involved. If attitudinal change is the intention of the film, it should deal with the problems an older couple would have to overcome in finding and adopting a new pattern. It would not suit the purpose or limitations of this film to go into these at length, but the film would be more effective if in the transition there were some sense of the struggle; a feeling of how they overcame the needs which brought them to live in their son's household, why the old man was lonely and demanded attention, or why he could only receive and not give. The play of forces is a powerful aspect of the problem, and for one who is personally concerned with this type of problem the omission would probably create the feeling that this does not really apply to him after all because his situation is so unique and so much worse.

The film does show the old man's attempt to see his behavior as others see it, and to accept the advice of the person who is trying to help him. There is an effective series of closeups of the old man going thru the process of making a decision to change. It expresses his happiness with the decision and the new approach.

On the whole, the film should leave its audience with a hopeful feeling thru its sympathetic handling, and the way it moves along from the incident of the old man's last day on the job to the positive presentation of the successful retirement pattern which the couple adopted. By example it shows that others can find a similar kind of positive approach. Tho the ending itself is slightly stereotyped, its positive note reinforces the film's main intention. For the community it is an effective restatement of the need of its older citizens for removing the barriers to productive employment, an appeal to help them find security and happiness in their later years.—*Jackson Tiffany.*

ART AND SEEING. (The Audio-Visual Education Service, University of Minnesota, Minneapolis 14.) 15 minutes, 16 mm sound, black and white. $60. Produced by Allen Downs and Jerome Leibling; sound by Irving Fink.

Today higher education helps to support and encourage valuable film making. Films which otherwise would not be made are produced free of commercial requirements—an exceptional benefit of the academic climate.

There are two types of university-produced films. The first type is published by university or college production units. (There are more than 30 such units in the United States.) These are usually formal films, made to document research, to assist teaching, or to edify.

The second type is the result of student film making. Often informal and highly expressive, these films explore the advantages as well as the limitations of the new language and usually show courage and enthusiasm.

ART AND SEEING is a film of the second type, made possible thru a graduate school grant at the University of Minnesota. It is a film concerned with the cultivation of visual awareness. It has no story, no total continuity.

The film is divided into two sections, each prefaced with a diffusively written statement. A scroll title announces the intention of the first part: visual artists derive or select their working material from their environments—thus they need to see and be aware of the world around them. The introduction asserts that the film makes it possible for us to "hold and examine" a number of familiar locations and activities as well as study specific design elements (texture, patterns, shapes and tones). It says that these elements are organized thru the logical principles of film editing (movement, suggested direction, change in size, repeats, closed and open space, contrasts and harmonies) as well as thru natural environmental relationships.

The pictures which follow are not always organized in this way. They are more a random colligation of visual fragments. We observe the outsides and insides of houses: a crowded stockyard, a barnyard, a frog and grasshopper, waves and seafoam, grass, rocks, coal, grainery activity, railroad repair, and construction work.

Now and then filmic continuity is suggested when a sequence is of the same general location or its action begins to build a space-time continuum. But for the most part the selection of shots, their vertical juxtaposition, and a total lack of dissolves and fades causes heterogeneity which makes for sudden visual shocks. This unhappily distracts from the design elements being featured. Many exquisite shots are interspersed into the occasional continuity. These are beautifully framed and photographed. Quite a few are still photographs made with a motion picture camera. The independence of these shots make them indestructible except when they are rudely snatched away by the galloping projector.

The preface to the second section announces a new assemblage of shots from the first part together with some new images. In order to make their design elements more clearly apparent, they are "related and contrasted" without regard to normal subject relationships.

These shots are rapidly cut close-ups with a few medium close-ups. Texture patterns predominate over shapes or tones. As before, each is beautifully seen and well photographed. Often there is an intended similarity between predominating elements.

ART AND SEEING attempts to demonstrate a difficult and momentous human activity. It first intends to show the rampant extravagance of visual reality; the lumbering raw material of the visual artist. Then it wishes to show his selection and arrangement of natural materials for the sake of their design elements. But in this it partly fails.

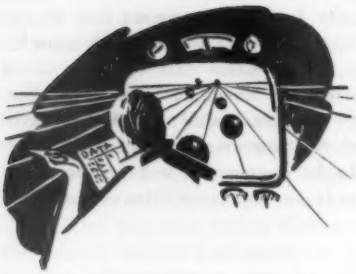
It fails to clearly communicate its idea thru the film medium. Its pattern is not quite clear. The shots of the latter section should not have been duplicated in the first part. (Included in longer shots, perhaps, but not exquisitely isolated.) For when we compare the last section with the first, the comparison is lost; both contain many of the same fine shots.

If the first section had shown our everyday world in an unselected, impressionistic manner, and the second were a program of totally *selected* shots (individual and complete within themselves or in a flow of continuity) we would then understand the artist's meaningful selection. If the latter shots remained longer on the screen we could better understand his analysis of their form, pattern, texture and tone.

Because there is no story and no total continuity in ART AND SEEING, it lacks filmic unity. Short moments of continuity, broken by many individual shots make its style inconsistent and confusing. It needs only to be edited with clarity and adroitness.

The sound track is well integrated with the visual. Stock music was selected for certain sections. Characteristic environmental sounds are used with other parts; cattle low in the stockyards, the frog's heart beats and trains whistle near the grain elevators. There is no spoken word, no narrative crutch. This makes the film more organically visual.

This film has some of the finest, most intense seeing I have ever witnessed on the screen. Nature's existing space was well analyzed and technically well photographed. The inherent beauty of our commonplace is trenchantly revealed. Even tho the film is exploratory and lacks assurance, it does increase our visual awareness. This value alone makes it an important film.—*Cameron Macauley.*



RESEARCH ABSTRACTS

MOTION PICTURES

MILLER, J., LEVINE, S., and KANNER, J. "A Study of the Effects of Different Types of Review and of Structuring Sub-Titles on the Amount Learned from a Training Film." Memo Report No. 17. Human Resources Research Laboratories, Bolling Air Force Base, Washington 25, D. C., March 1952.

Purposes: (a) To compare the learning effects of a film which "spaces" review sequences thru a film with another similar film which "masses" these same review sequences at the end of the film. (b) To determine the effects of sub-titles designed to "structure" the film into discrete units.

Procedure: Twelve different training-film presentations on elementary electricity were employed. Each of the twelve versions was shown to 3 high school classes so that a total of 36 classes (1263 subjects) participated in this experiment. These twelve versions were combinations of four review treatments and three sub-titling treatments. The four review treatments were: (a) no review; (b) massed review at end of film; (c) spaced review; (d) spaced oral review (sound track but no picture). Each of these four review groups was further divided into 3 sub-groups receiving the following sub-titling treatments: (a) no sub-titles; (b) five *major* sub-titles only; (c) five *major* and 21 *minor* sub-titles. Pre- and post-tests were given to all individuals just before and after the film showings.

Results: (a) No significant differences were obtained between the levels of learning using the different sub-titling conditions. (b) The conditions of massed review (at end of film) produced significantly greater learning than the condition of "no review" or the two conditions of "spaced review" used in the experiment. (c) The mean post-film scores of the conditions for "no-review," spaced review, and "spaced review—oral only" were about the same.—*Edmund Faison.*

LUMSDAINE, A. A., SULZER, R. L., and KOPSTEIN, F. F. "The Influence of Simple Animation Techniques on the Value of a Training Film." Human Resources Research Laboratories Report No. 24, April 1951.

Purpose: To determine the influence on learning of simple animation devices such as pop-in labels and moving arrows when employed in a training film.

Procedure: Four experimental films, based on the U.S.O.E. micrometer film, were constructed and used in 16 experimental treatments representing all possible combinations of the following four factors: (a) whether or not the film was "animated" (contained pop-in-labels, moving arrows, etc.) or "non-animated"; (b) whether or not a pre-film test was given; (c) whether the film presented three or six examples of micrometer reading; (d) and whether the film was or was not followed by a supplementary sound slide-film giving additional pointers on how to avoid the commonest types of error in reading the micrometer. Two classes were given each combination so that, in all, 32 classes of Air Force basic trainees (about 1300 men) were used.

Results: Significantly greater learning occurred in the "animated" groups than in the "non-animated," regardless of whether or not the pretest was given, whether three or six examples were used, and whether or not the supplementary slide-film was given. The superiority of the animated versions held for both above-average and below-average intelligence subjects with an indication that the lower and middle ranges may have benefited most.—*Edmund Faison.*

VANDERMEER, A. W. "Relative Effectiveness of Color and Black and White in Instructional Films." Technical Report No. SDC-269-7-28, The Instructional Film Research Program, The Pennsylvania State College. Port Washington, L. I., New York: Special Devices Center, 1952.

Purposes: (a) Does color contribute to learning from instructional films? (b) Does additional cost of color justify its percentage increase in learning over black and white films.

Procedure: Two experiments were conducted about a year apart. In the first experiment 250 high-school students were shown black and white versions and 250 were shown color versions of five separate and unrelated films. Tests were given immediately before and after the film showings and again 6 weeks later. In the second experiment 199 students were used, with an alternation technic to equate the differences in learner characteristics. Films used were selected because they appeared to make effective use of color or because color was intrinsic to much of the subject matter.

Results: Final results were practically the same for both experiments. Both color and black and white films produced learning. No significantly greater learning was demonstrated by the color films on the immediate recall tests, but recall scores at the end of six weeks were significantly higher for three of the five color films. Color films were rated as preferred by the subjects over black and white. No significant sex differences with regard to preference for type of film showed up. The author concludes that the use of color does not seem to be justified in terms of greater learning.—*Edmund Faison.*

TWYFORD, L. "Film Profiles." Technical Report No. SDC 269-7-23, The Instructional Film Research Program. Port Washington, L. I., New York: Special Devices Center, November 1951. Report available from Department of Commerce, Office of Technical Services, Washington 25, D. C. 50¢.

Purpose: To determine if a person's subjective rating of the amount learned about specific points correlated highly enough with objective test items to be considered a reliable measure of learning during various sections of a film. Three kinds of subjective ratings were investigated: (1) "I am learning from the film"; (2) "I predict my classmates are learning from the film"; (3) "I like (or dislike) the film."

Procedure: Senior high school and elementary psychology students (N = 276) were divided into seven different groups. Three of these groups had to rate continuously an informational film on the basis of the three ratings listed above. The remaining four groups (which included a control group which did not see the film) were given different true-false tests to estimate objectively the learning which took place at various sections throughout a ten-minute film on precision measuring instruments.

Results: (1) The "I am learning" profile seemed to offer some promise that students, with reasonable accuracy, can report when they are learning from a film as evidenced by a correlation of .53 with the combined test profile. (2) The "I predict learning" rating correlated only .16 on the first showing and .36 on the second showing. (3) Little, if any relation existed between "like-dislike" and tested learning.—*Edmund Faison*

OPINION AND ATTITUDE CHANGE

HOVLAND, CARL I., and WEISS, WALTER. "The Influence of Source Credibility on Communication Effectiveness." *Public Opinion Quarterly*, 1951-52, 15, 635-50.

Purpose: To determine the effects of credibility of the source of a communication on the acquisition and retention of the material communicated. The study was designed to obtain further data on several hypotheses advanced by Hovland, Lumsdaine, and Sheffield in *Experiments on Mass Communication* (Princeton: Princeton University Press, 1949, p. 101f.).

Procedure: "The overall design of the study was to present an identical communication to two groups, one in which a communicator of a generally 'trustworthy' character was used, and the other in which the communicator was generally regarded as 'untrustworthy.'" Questionnaires designed to obtain data on factual information acquired from the communication and the extent to which opinion was changed were administered before, immediately after, and four weeks after the communication. The communication consisted of a booklet containing an article on each of four different topics, with the name of the periodical or author given at the end of the article. Two "trustworthy" and two "untrustworthy" sources were included in each booklet, 24 different booklets covering the various combinations used. The subjects were 223 undergraduate history students at Yale University. Five days after the initial questionnaire, the communications were read and the second questionnaire completed. An identical questionnaire was given four weeks later.

Results: (a) No difference was found in the amount of *factual information* learned from the "trustworthy" sources as compared with the "untrustworthy" sources. (b) However, *opinions* were changed significantly in the direction ad-

vocated by "trustworthy" sources as compared with "untrustworthy" sources. (c) After four weeks, there was no significant difference in the amount of *factual information* retained from either of the two sources. (d) After four weeks, there was a *decrease* in agreement with position advocated by "trustworthy" communicators and an *increase* in agreement with that presented by "untrustworthy" sources. (e) Those who initially disagreed with the "untrustworthy" source forgot the name of the source sooner than those who initially agreed.

General Conclusion: "The data on post-communication changes in opinion... can be explained by assuming equal *learning* of the content whether presented by a trustworthy or an untrustworthy source by an initial resistance to the *acceptance* of the material presented by an untrustworthy source. If this resistance to acceptance diminishes with time while the content which itself provided the basis for the opinion is forgotten more slowly, there will be an increase after the communication in the extent of agreement with an untrustworthy source."—*William Allen.*

HOVLAND, CARL I., and MANDELL, WALLACE. "An Experimental Comparison of Conclusion-Drawing by the Communicator and by the Audience." *Journal of Abnormal and Social Psychology,* 1952, 47, 581–88.

Purpose: To study the "effects upon opinion change of having the communicator draw the appropriate conclusion from material he had presented... compared with those produced when the drawing of the conclusion was left to the audience."

Procedure: "The overall design of the study was to present communications which were identical except for the two experimental variations: the presence or absence of an explicit statement of the conclusion at the end, and an introduction which elicited either suspicion of the communicator's motives or belief in his impartiality. Thus four different versions of the communication were required. Opinions on the issue discussed in the communication were measured before the communication and again after the communication. In addition, a number of fact-quiz items were included in the questionnaire given afterwards, to determine the amount of information derived from the communication." The communication, on the topic "Devaluation of Currency," was tape-recorded and described to the subjects as being a transcribed radio program. Personality questionnaire and intelligence test scores were obtained. The subjects were 242 New York University undergraduates in eight sections of introductory psychology.

Results: (a) "Over twice as many subjects changed their opinions in the direction advocated by the communication when the conclusion was explicitly drawn than when left to the audience." (b) The "suspicion-arousing" communication was judged to have given a more one-sided presentation of the facts than the "impartial" communication, even tho the talks were identical. (c) The amount of factual material acquired was no different for the two kinds of communicators. (d) There was no significant difference between the two kinds of communicators in changing the audience's opinions. (e) There was no relationship between intelligence or personality factors and the influence of conclusion-drawing. (f) "The combined operation of the variables of suspicion and conclusion-drawing produced a highly significant effect, the unbiased communicator who drew the conclusion being the most effective and the suspicion-arousing communicator who did not draw the conclusion being least effective."—*William Allen.*

TELEVISION

WIEBE, G. D. "Responses to the Televised Kefauver Hearings: Some Social Psychological Implications." *Public Opinion Quarterly,* 1952, 16, 179–200.

Purpose: To determine what happened to the feelings aroused in citizens in opposition to municipal corruption as a result of the televised Kefauver Hearings in New York City.

Procedure: Interviews were administered to 260 male, white collar and professional people, residents of New York City, under the age of 36, who had watched parts of the Kefauver Hearings on television. The interviews were given six to nine weeks after the Hearings.

Results: (a) "Overall, 260 persons (100 percent), all citizens of voting age, expressed concern with a local social problem. Sixty-five persons (25 percent) 'felt like' doing things classified as 'problem-solving.' Thirty-three persons (13 percent) actually did things which, liberally interpreted, might be classified as behavior directed toward the solution of the problem. Thirty-eight persons (14 percent) believed without reservation that what they did made a difference, but only six of these persons actually did things that were classified above as problem-solving." (b) Membership in political parties appeared not to influence action on the problem. (c) There was a tendency to reject problem-solving behavior as hopeless, a feeling of "social impotence" in dealing with the problem. (d) However, six months or so after the hearings, Rudolf Halley, chief counsel to the Kefauver Committee, was elected to the office of president of the City Council of New York City, over the opposition of the two major party candidates. The author states that this action "illustrates the function of an alternative leadership which converts the particular dissatisfaction characteristic of social impotence into a benefit of membership without depriving members of their prior benefits of membership."—*William Allen.*

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